# Chapter 11
# Intelligence and Innovation for City Tourism Sustainability

Jaume Mata

## 11.1 Introduction: The Road Behind

We love our cities. We are delighted to live in such rich environments, with plenty of opportunities for enjoying our professional and leisure time. And we are proud to invite people to come visit us. We love to be hosts. Visitors bring incomes that we appreciate. In addition, they also give us the chance of meeting new people, showing our cultural and social values. Moreover, they might be a way to promote the use of our natural resources. This is the main statement of any city playing the game called "city tourism".

Cities have always attracted people (Yeoman 2012a). Firstly, they are the most efficient way to organize concentrations of people living together. Through adequate urban management, most people's needs may be solved by generating useful synergies. Thus, many of the planet inhabitants have become urban citizens through the ages. Nowadays, cities are the preferred way of living both in developing and developed countries. It is estimated that by 2050, 70% of the world's population will be living in cities and will contribute over 30 trillion US dollars to the world economy (Dobbs et al. 2012).

In short, people living in cities are looking for the day-by-day advantages of urban organization: housing, mobility, employment, leisure, education, security, etc. (European Environment Agency 2016). Local governments care about the complex logistics underlying the daily life of their citizens. By improving facilities, cities become attractive also for neighboring people willing to visit them. As Yeoman has stated, cities hold a particular fascination for tourists, and they have long been the centre of tourism activity, from the early times of civilization (Yeoman 2012b). After a few years, the cities can become tourism destinations, hosting both locals and

J. Mata (✉)
Fundación Turismo Valencia, Valencia, España
e-mail: jaume.mata@visitvalencia.com

visitors. This entire population shares the cities' space and resources, interacting among themselves and producing as well as receiving both positive and negative impacts.

The balance between costs and benefits of hosting visitors is the goal of destination managers. Since the beginning, city tourism has been recognized as a source of positive transformation, with effects on city image and reputation, as well as injecting financial resources directly into the place (Kotler et al. 1993). In addition, it has always had an effect on the repositioning of attitudes and perceptions, and "certain 'knock on' effects for inward investment, civic pride, business development, attraction and retention of students and, of course, further tourism" (Heeley 2011, p. xvi). Because of this, local governments and industry have approached tourism as the goose that lays the golden egg.

But cities are complex living social systems with their own "loading capacity" systems, where changes impact in short or medium term the lives of their inhabitants. Crowding, congestion, waiting time at tourism attractions, emissions and pollution caused by mass tourism in cities are negative effects of uncontrolled tourism development in urban regions, which threaten the preservation of the environment, heritage, social and cultural values, and maintenance of quality of life for residents (Timur and Getz 2009). Ignorance of these complex interactions affects both international and domestic visitors (Fayos-Solà 2015) as well as local citizens. After years of growth and positive benefits, some places are reaching their limits, and their livability is under serious threat. The question raised here reads as follows: Is tourism a problem or part of the solution for the sustainability of cities?

City tourism has been growing constantly in the latter half of the twentieth and early twenty-first century. This is a consequence of three social changes: development of the transportation infrastructure, increased disposable income, and improved access to communication technology (Kolb 2006). Then, since the early nineties, the rate of growth has increased significantly year-to-year, as registered by European Cities Marketing (ECM 2016). However, many cities did not consider the risks. In many cases, the lack of effective management, long term planning and 'destination visioning' of city tourism has resulted in strategic mistakes (Cooper 2002). As a consequence, the ratio of residents to visitors, indicating seasonal pressure on the environmental and social resources of host destinations, may generate additional difficulties for residents: i.e. vehicle traffic, competition for local resources such as electricity and water (Brown et al. 2012).

The concentration of tourism in space and time is creating a negative effect for both local communities and travelers, in the absence of a smooth interaction. Local officials, responding to the complaints of their constituents and outraged by tourists' disrespectful behavior, have begun to re-enforce regulation measures, building up a 'revolt against tourism' (Becker 2015). In a few words, there has been a widespread misunderstanding of growth with development (Fayos-Solà 2011) and the concept of inclusive and sustainable city development must be reconsidered. The way local authorities have reacted reflects how governance has been implemented. Most of these authorities have tried to counter attack the problems according to previous tourism and social paradigms, where tourism was

an ancillary activity for the city, ruled by traditional market laws. They hoped that regulations and supply control would cope with it. Unfortunately, old paradigms have been overtaken by social, economical and technological disruptions. Old recipes might not work anymore.

Although a main subject nowadays, city tourism is quite a recent field of research. Very few articles were written before the nineties (Law 1992). Little by little, geographers began to look at the issue of sustainable tourism, although urban city has received relatively little attention (Butler 1999). Most of the authors (Mathieson and Wall 1982; Murphy 1985; Pearce 1989, 1995) on tourism and sustainable development have placed a clear emphasis on environmental matters and new, often small-scale, developments generally related to natural or heritage features. Butler has also highlighted that the concept of sustainable tourism has been tied to the physical environment, ignoring the importance of human and social elements, such as community perception towards visitors or partnerships (Achana and Augoustis 2003), which are crucial in city tourism. Additionally, from a different perspective, the issue was included by the European Environment Agency in its Dobris Assessment (EEA 1995). The EEA accepted that large cities are ready to absorb high-volume tourism, although smaller urban areas are more affected by concentration of tourism.

Following the growth of tourism flows towards the cities, the issue has been under closer scrutiny by academia, industry and administrations in the last years (Lu and Nepal 2009). Likewise, the European Commission has encouraged research on this field. Projects such as the SUT Governance (Sustainable Urban Tourism Involving Local Agents and Partnerships for New Forms of Governance) have aimed "to develop, validate, and deploy a general framework for urban sustainable tourism partnerships between researchers, city officials, tourism stakeholders, and community representatives and to elaborate and promote innovative forms and instruments of local governance involving the principles of sustainability and participatory decision making" (Paskaleva 2004, p. 43).

The latest reviews of the challenges faced by cities show that technological advances, new stakeholders, the globalization process, new customers' needs and evolving social values are changing the rules of the game (Hsu et al. 2016). Even now, many tourism strategic plans still ignore that the pace of change is accelerating, and there are many lessons to be learnt from those destinations overwhelmed by the tourism wave before it is too late. The change of the city tourism paradigm requires innovative solutions to cope with the challenges. At the same time, this shift has been also strongly influenced by information and communication technology (ICT) developments (Boes et al. 2016). Innovation does not mean only adding technological sophistication. Innovation applies to many different fields, from governance to business processes, where digital technologies must enable new solutions for organizations.

Tourism stakeholders must collaborate with the city's institutional setup looking for agreed solutions. They must also learn from other industries and administrations where innovations have promoted tourism since its early stages (Hjalager 2015). Moreover, there are industries where digital innovation is enabling big, disruptive

steps forward in terms of intelligence and sustainability. Cities are not only becoming smarter, there is also an emerging trend to get them 'wiser' (Humbleton 2015). The objectives for the development of cities have changed in the last few decades. In the nineties, there were tagged with terms such as sustainable. In the 2000s, they shifted to 'smartship', understood as ICT-led urban innovation (Coll and Illán 2015). But new realities such as good city governance, public-private partnership for urban management, sustainability and inclusivity require a new approach: cities must be 'wiser'.

Likewise, urban tourism must be transformed in order to be sustainable, fostering smarter, wiser destinations. This chapter reviews the newest examples from European cities which are rethinking the future of tourism: capitals that are looking inwards to understand their nature, their DNA; cities that are creating conversations with their visitors; places that are investing in technologies to become more accessible, wiser, by learning every day, creating new solutions and experiences that are addressed to locals and visitors; and innovations that are looking to make our cities more livable for all.

## 11.2 Main Challenges and Strategies for City Tourism

In 2012, the United Nations World Tourism Organization (UNWTO) organized the 1st City Tourism Summit on "Catalyzing Economic Development and Social Progress". The government officials and experts determined then that economic and social progress in city tourism must also ensure a sustainable development vision (UNWTO 2012). Priority actions recommended included:

- Raising awareness of the economic and social impact of city tourism on national and local economies;
- Integrating urban tourism as a key pillar of government policy at all levels;
- Establishing effective and renewed instruments for partnerships among all stakeholders involved in tourism to ensure the exchange of information, initiatives and knowledge;
- Highlighting the importance of human capital and investment in professional training;
- Favoring measures to foster and recognize sustainable local policies and initiatives;
- Implementing innovative strategies to develop new products with high added value by addressing niche markets;
- Upgrading the quality of the visitor experience; and
- Advancing towards the concept of "smart cities".

A few years—and four summit editions—later, the participants in the 5th UNWTO Global Summit on City Tourism, reviewed the position of tourism both in policy making and governance. The former list of priorities shifted towards a more

focused list of topics that destinations must keep watching on. The outcome was a report of issues affected by global challenges (UNWTO 2016):

- Safety and security;
- Fast pace of innovation and new technologies: the digital revolution;
- New business models; and
- Limits to sustainable development.

Above all, the experts agreed that "cities need long term policy, planning and good governance for development. Tourism must be integrated in this process" (UNWTO 2016, p. 5). Thus, the forecasted expansion of urban tourism will multiply the interaction between locals and visitors. Under the proper management, it will bring the opportunity to enrich both the social community and the tourism experience. However, the lack of action may deteriorate the city and its image as a destination.

The first challenge highlighted was safety and security. As observed in several European capitals, it is a critical issue affecting not only inhabitants but also critically damaging the tourism industry (Baker 2014). As shown in the European Cities Marketing Benchmark Report, cities like Paris have lost 13% of visitors in a single year (ECM 2017). The capitals affected by terrorist attacks have registered a significant loss of visitors and its image remains strongly linked to risk and violence (LaGrave 2015). Crisis management plans must involve not only local residents but also the visitors and their impact on the city image.

Secondly, the impact of digital technology on tourism has been both extensive and intensive in the last decades. It has been considered as a digital revolution. The entire industry (from transport to distribution, bookings, information, accommodation, etc.) has adopted an expanding information and communication technology (ICT) in order to survive. However, change and transformation have become a permanent process that must be addressed by all the public/private organizations in order to be competitive and efficient (Dwyer et al. 2009). Underlying this effect is the fact that consumers have new, different behaviors and consumption patterns (Juul 2015). Nowadays, the standard tourist is a digital traveler with a "fluid identity" (Yeoman 2010), which makes the task of DMOs even harder. The concept of fluid identity has emerged at the beginning of the current decade, regarding tourism as a trend where the visitors like trying new things and desire constant change. Therefore, advances in information technology have been a reply to consumers' trends, widening the ways of access and generating immediate, permanent interaction between providers and users.

A powerful effect of the expansion of ICT is the empowerment of travelers. They use digital technologies to research, explore, interact, plan, book and ultimately share their travel experiences (Oliveira and Panyik 2015). Moreover, the destination branding is strongly affected by user—generated contents that might be competing with the DMO strategy (Yeoman and McMahon-Beatie 2011). Therefore, cities must be smart enough to engage the visitors, involving them in order to try to have a unique voice in destination branding.

Thirdly, new players have entered the game with new, competitive business models. New online platforms (peer-to-peer, P2P, platforms) have re-designed the way tourism products are being distributed. Thanks to internet-based applications, the possibility to reach wide customer segments through these platforms—linking directly providers and clients—has become a new collaborative or sharing economy (Hsu et al. 2016). Smart startup companies—such as the San Francisco based AirBnB—have taken advantage of the opportunities to bridge new consumer trends and residents' entrepreneurship. In response to the wave of criticism about its negative impacts, AirBnB argues that incomes earned by resident hosts and local businesses strengthen communities and economies (AirBnB 2017).

The entire society is now involved in the debate about the balance of the impacts generated, but major urban destinations such as Amsterdam, Barcelona, Berlin and Paris are already strongly affected by the high concentrations of people and heavy pressure on the housing market. According with the research carried out by the University of Aalborg for the European Commission, European cities are struggling with their own success (Dredge et al. 2016). However, although it is a common problem, the way cities are handling these issues differ significantly, without a clear solution to define the difference between sharing economy activities and commercial rentals. Meanwhile, around 40% of the available accommodation in a leading city like Barcelona is currently unlicensed (Dans 2016).

The fourth challenge is the limit to sustainable city tourist development. The UNWTO (2016) expert panel emphasized that, recognizing that tourism helps cities to change and develop, it may also cause negative impacts that must be identified and managed. For instance, the use of limited land for alternative, competing uses (e.g. residential versus tourism accommodation) may break the pacific coexistence. A response to the growth of visitors based on traditional strategies, i.e. promoting leisure, cruises and the convention markets, puts pressure on cities where local residents have to compete for the properties and building space available. Therefore, property and socio-political issues are colliding with commercial and tourism strategy questions in all cities. Thus, tourism reinforces sometimes the process of gentrification (Levy et al. 2006).

The process of tourism gentrification in cities like Venice not only is modifying the local atmosphere, but also compelling the inhabitants to move away from the city center (Minoia 2017), in a "persistent hemorrhaging of the city's population since the 1950s" (Quinn 2007, p. 6). This effect of tourism also concerns much bigger cities like Barcelona (Cócola 2015), New Orleans (Gotham 2015), Singapore (Chang 2000) or New York (Rees 2003), to name just a few. In the latter case, recent research carried out by Inside AirBnB shows that the impact of tourism can even act as a racial gentrification tool (Cox 2017).

In opposition to this process—although tourism is only one factor inside the whole gentrification cycle (Cities Journal 2014)—social movements have appeared ranging from anti-tourism resentment into constructive urban preservation projects with residents' protection aims. Active groups are reacting against what they feel is the main power behind the impact on their livelihood (Garcia 2014). As Mrs. Ada Colau wrote in the newspaper *The Guardian* a few months before becoming Mayor

of the city of Barcelona "We've all been a tourist at some point, but citizens of this great city are fighting for a way of life as they are sidelined by the authorities" (Colau 2014). Thus, one of the main assets of city tourism—sharing the local livelihood—is endangered.

Last but not least, sustainability includes environmental concerns of city tourism, which have received very little attention until recent times. Looking at the United Nations Environmental Programme report on Climate Change and Tourism 2008 (UNEP 2008), there are only a few collateral mentions to urban tourism. This report focused mainly on the effects of climate change like warming, desertification, deforestation and harm to biodiversity, which have great impacts on nature-based destinations. Considering that urban systems are relatively resource efficient, it looked like urban areas would not be affected. However, this belief is far from reality. Even more, it creates multiple exposure patterns.

The list of environmental challenges begins with global warming. According to UNWTO estimations (UNEP 2012) tourism is responsible for 5% of global CO2. Transport accounts for almost 95% of tourism contribution to CO2. In particular, cruise tourism is the most emission-intense mode of transport per kilometer travelled, bearing in mind that most cruises start with flights to reach harbors. Therefore, the impact of environmental regulations on transport, as well as the rising cost of fuel, will undermine the overall tourism demand. In addition, the carbon footprint of cities is becoming a relevant indicator for city tourism image.

In the second place, urban ecosystems are under pressure (European Commission 2011). The quality of life for locals and visitors requires big efforts to manage urban sprawl, water consumption and use of energy. According to the European Environment Agency "a tourist consumes 3 or 4 times more water per day than a permanent resident" (EEA 2015, p. 3). Thus, city tourism also threatens biodiversity and impacts in large areas.

Thirdly, beyond the perception of low carbon footprint, environmental quality is already being a limiting factor to host visitors. Air pollution around world-class tourism attractions can exceed EU's safe limits, like Oxford Street in London (Carslaw 2014), so being awarded by mass media as "the most polluted street in the world" (Griffiths 2014; Jones 2014; Vidal 2014; BBC 2014). Once air pollution covers the entire city, as it happened in Delhi in November 2016 (Smith 2016) or Beijing's "Airpocalypse" (Chen 2017), the tag of "World's most polluted city" will threaten city tourism for a long time.

Together with air pollution, noise is also becoming a source of conflicts between residents and visitors. Either because of people talking loudly on the streets, bus transport and stops, music from bars or parties, tourist boats, etc., local governments are seriously considering these noise disturbances. The tourism activity must also be aware and work to avoid them. In this sense, according to the World Travel and Tourism Council, a sustainable future must be "based on integrating the needs of 'people, planet and profits'" (WTTC 2013, p. 2). Therefore, in full commitment to transparency, companies' should follow the Environmental, Social and Governance method (ESG), reporting sustainability, corporate responsibility, or environmental, social and governance (WTTC 2015).

Finally, natural protected areas close to cities are also very sensitive to excess tourism pressure. Once again, tourism researchers have paid little attention to the issue, on the one hand because of the relative minor importance given to city tourism until recent years and, on the other, because heritage protection in urban environments meant mainly building preservation. However, as city tourism expands and visitors interests diversify towards more eco-friendly experiences, the impact of larger numbers of visitors also widens beyond man-made urban spaces, affecting the surroundings (Joppe and Dodds 1998) which can be of high natural value (such as rivers, wetlands, forests, beaches and cliffs, hills and mountains).

The city of Toronto might be a good example of cities pioneering understanding and managing a sustainable approach to tourism, by creating the Green Tourism Association already back in 1996. In its application to city tourism, "the 'green' concept allows the tourism industry to improve its image and practices while continuing a commercial profit strategy. If 'greening' is used solely for image purposes, rather than an approach adopted in practice, the very landscape, culture and heritage that provides the initial attractions will disappear" (Joppe and Dodds 1998, pp. 37–38).

At international institutional level, the conservation of natural and cultural heritage by city planners was also highlighted by the UNESCO in their report for tourism managers (Pedersen 2002), as a measure to be included in urban regeneration programmes. Under the label of heritage tourism, it included a wide segment of visitors to museums, monuments or natural attractions. Since then, cities and DMOs have included this theme into their strategic plans.

## 11.3   Towards a New City Tourism Paradigm: Recommendations

The challenges faced by city tourism have been clearly identified. The whole framework is changing at a fast pace. Cities must apply new strategies in order to stay competitive in tourism. Proactivity and flexibility with the appropriate information and technology will be required to cope with the challenge.

According to the inspiring statement introducing the Strategy 2020 of Wonderful Copenhagen (WoCo), "th*e end of tourism (as we know it)*" has arrived (WoCo 2017). It concludes that mass tourism, tourism segmentation between business and leisure (among others), tourism as "an isolated industry bubble of culture and leisure experts" (WoCo 2017 p. 3), and tourism marketing based on picture-perfect advertising belong to the past.

Moreover, this prestigious destination management organization (DMO) that has led the successful tourism strategy of the capital of Denmark recognizing the expiration of its role as "the destination's promotional superstar, the official DMO with authoritative consumer influence, broadcasting superiority and exclusive right to promote and shape a destination" (WoCo 2017 p. 3).

The volume of tourism hosted by cities is entailing considerable changes and having huge impacts. Cities are home to many more than those who actually live there (WoCo 2016). The local society requires taking it seriously, raising questions that have to be addressed by researchers and experts. In this sense, from the perspective of the city of Copenhagen, there are ten key starting questions for the future—ranging from competitiveness to the sharing economy or sustainability (Fig. 11.1):

These reflections put pen on paper a common agreement of the experts on city tourism: there is a need for a new social/political paradigm. Such paradigm must be based on understanding cities as smart tourism ecosystems, where travellers are seeking out a sense of localhood, looking to experience the true and authentic destination (WoCo 2017). Cities are ecosystems where locals are the destination,



**Fig. 11.1** Ten pressing questions toward the future. Source: Wonderful Copenhagen (2016, p. 8)

where their support and advocacy become the essence of the liveability and appeal of the destination. Thus, the city (vision of residents) and the destination (vision of visitors) have to be harmonious as well as vibrant, attracting, relaxing, memorable, sustainable, exciting. . . liveable.

While highlighting the need for such *sense of localhood*, and the importance of tangible and intangible traditional assets (like culture or heritage) as competitiveness tools, the new paradigm implies a change in terms of demand and supply through innovation, new technologies and new business models. A new paradigm that will constantly evolve and where the ability to change along with it will determine the appeal of destinations and organizations.

As confirmed by world experts, it is clear that the positioning of a city as a tourism destination requires managers to focus on the clever combination of sustainable development, cultural heritage conservation, inclusiveness, accessible tourism, private-public-people partnership (PPPPs), efficient resource deployment and authenticity. Moreover, the high complexity, long time-scale and wide scope of tourism require tourism to be integrated in a broader policy agenda (OECD 2016).

Altogether, it is a huge ecosystem generating an immense amount of information exchanges—including data, indicators, flows, etc.—that should be monitored in order to take advantage of the potential synergies, and to avoid risks from malfunctions. A system that, like a human body, requires an intelligent network of sensors to get the best of it. However, such macro-system would be unmanageable if supported only by traditional processes.

Notwithstanding, the state of the art of information and communication technologies permits coping with such a challenge. In fact, the evolution of many cities toward smart cities opens the way to create *smart destinations*. A good definition of smart destination is included in the UNWTO awarded *Vienna Tourism Strategy 2020*: "SMART Vienna 2020 blends the qualities of Vienna as a city that embraces a culture of sustainability and excels at smart urban technologies and intelligent mobility solutions in order to present it as a 'smart tourism city'—a city that offers both visitors and residents an exciting yet relaxed, authentic, comfortable and 'green' urban experience." (Europaforum Wien 2014, p. 6). This states the pathway toward the new urban tourism paradigm.

The new paradigm for sustainable/resilient tourism is based on four pillars. Firstly, *process innovation* in several fields such as market intelligence, mobility, security, wastes management, etc. Secondly, implementing *new technologies*, allowing for new models of tourism governance (with the active participation and commitment of stakeholders) and new uses of communications (big data, sensorization and online information delivery, WIFI as a must, connectivity, safety and security, etc.). Thirdly, guaranteeing the universal *accessibility*, regarding active health ageing and inclusive tourism. Finally, *social environmental sustainability*, where managers have to achieve high levels of social involvement, creating a "sense of place". At the same time, urban destinations must be adapted for climate change: reduced emissions, "greening" of urban destinations, and efficient, sustainable use of natural resources like water and energy.

The framework for this paradigm is a true tourism governance of destinations, in accordance with the terms of reference defined by the European Commission (European Commission 2001): openness, participation, accountability, effectiveness and coherence. In contrast to other kind of destinations, where land and physical attributes are the main attractions, urban destinations are made of a mix of 'hard' (the city) and 'soft' (the citizens) attractions. Thus, citizens play a key role on the experience looked after by the visitors. Additionally, in order to obtain these citizens' commitment toward the tourism activities (i.e. the essential social sustainability), destination managers must draw their strategies with consideration of the wider consensus. As also stated by the UNWTO High Level Panel, DMOs must "involve all the local partners in this process to make them instrumental for development and for the consciousness of local identity" (UNWTO 2016, p. 7). Once again, process innovation and tech-based solutions help solving the complexities of tourism governance.

Process innovation in intelligence, by applying new technologies, will enable more competitive DMOs and enterprises. Information systems like TourMis—a tool for exchanging data, information and knowledge supported by European Cities Marketing and the European Travel Commission—enable strategists and policy makers to make wider benchmarking analysis, getting knowledge of best practices, improving their performance and solving inefficiencies (Onder et al. 2017). Open data marketing information systems like TourMis allow compiling online tourism statistics from cities, supporting decision makers with reliable, comparable information about trends in markets, seasonality, guest mix and other benchmarking and forecasting analysis for competitive and strategic tourism planning (Mazanec and Wöber 2010).

Process innovation will improve sustainability. A promising example is the Smart City Hospitality project—funded by the European Commission through the H20202 ERA-NET scheme. The project, described in the website, is aimed to "the assessment of intervention strategies based on an interactive simulation-supported multi-stakeholder approach that triggers social learning and behavior change, while stimulating shared governance and smart citizenship" (SCITHOS 2017). A multidisciplinary team for the project has been formed by universities, research institutions, information technology companies and DMOs. Starting with a report on the current state of urban tourism and its governance, the research team is working on the identification of the Key Performance Indicators (KPI) for its sustainability and the definition of the Smart City Hospitality Concept. Afterward, the consortium is developing a simulation tool and apps that will be applied by DMOs to create interactive work with their stakeholders. Thus, all the players involved (from visitors to residents) will be able to participate and understand the effect of all decisions taken.

The social environmental sustainability is the fourth pillar of the paradigm for a resilient urban tourism. The European Commission has developed its own platform to help destinations to monitor such a sensitive issue: the European Tourism Indicator System (ETIS). It is a set of indicators with the aim of adopting a more intelligent approach to tourism planning. It includes a *management tool, a monitoring system* (for collecting data and detailed information) and *an information tool* (not

a certification scheme), useful for policy makers, tourism enterprises and other stakeholders (European Commission 2016).

### 11.3.1 The Spanish Model of Smart Destinations

Tourism is a key strategic industry for Spain. Since the first strategic plan was designed by the national tourism administration, named FUTURES I (SET 1991), a quality focused management of destinations and tourism marketing has been implemented, from national to local levels, and involving both the public and private sectors.

In the last few years, tourism administrations have been working on the design of Smart Destination models, through permanent research and proactive management. This has been linked as well to innovation in city administration, i.e. smart cities. In this sense, it has been stated that "a smart destination is an innovative tourist place, accessible for all, consolidated on an avant-garde technological infrastructure that guarantees the sustainable development of the territory, facilitates the interaction and integration of the visitor with the environment and increases the quality of its experience in the destination and the quality of life of the residents" (SEGITTUR 2015, p. 31).

Regional administrations like the Valencian Institute of Tourism Technologies—INVATTUR, are following these guidelines. Hence, its handbook for smart destinations states that "the evolution toward smart destinations is a new form of focus and management, an opportunity to activate the process of change of the destinations, that is required by the economic and tourism environment. It is a process aimed to take advantage of the opportunities that arise from the new scenario, improving its efficiency in its management, strengthening the competitiveness and increasing the social profitability of tourism" (INVATTUR 2015, p. 120).

In this model, the *governance* of the destination promotes five interrelated fields: sustainability, connectivity, sensors, system of information and an ecosystem of innovation.

- **Sustainability**: It is linked to the urban and tourism development model. Smart Destinations favour the application of the principles of sustainability and thus contribute to an improvement of the destination image and positioning. Also, sustainable development involves the configuration of accessible destinations for disabled people.
- **Internet connectivity**: It is essential for a digital economy involving businesses and consumers. Simultaneously, it constitutes a pre-requisite for sensorization.
- **Sensor-based smart destinations**: These are networks of electronic devices, sometimes using personal sensors as the "wearables". It might deliver a huge amount of real-time information. Such sensors are a source of power of the *system of information of the destination*. Combined with business intelligence systems and incorporating the possibilities offered by Open and Big Data, the whole flow

of information from the entire destination opens a new world of opportunities to personalize the experience at an extremely high level.

- **Innovation**: A smart destination is an innovative destination. It is necessary to promote a true *open innovation system*, based on the participation of companies, administrations and research (triple helix). It is also interesting to incorporate a cluster approach in its most conventional sense (companies that compete and cooperate with each other to improve the global competitiveness of the destination) to strengthen tourism knowledge, the capacity of innovation and entrepreneurship.

## 11.3.2 The Future of DMO's Role: Destination Management Systems

The traditional roles of destination management organizations are being overrun by the shift on consumers' trends, technology developments and social changes. European DMOs are rethinking their mission and functions. Many questions arise: Do they have to promote and attract more visitors? Do they really influence visitors' decisions? Must cities fund their operations? Should they do direct promotion, or would it be more efficient to channel this through other partners? And even further: Must they directly lead all aspects of destination management?

The role of Destination Management Organizations must change, from marketing organizations to expert bodies in charge not only of attracting the required demand, but also of supplying the stakeholders with intelligence and smart tools to get the most from the visitors' personalised experience. The review of challenges and strategies implemented, jointly with the current discussion among DMOs, leaves a clear answer: destinations need an organization to foster and coordinate strategies for competitiveness and sustainability. To do this, smart destinations require competitive intelligence and dynamic interconnection among stakeholders, where information could be exchanged instantly (Buhalis and Amaranggana 2014). The management of information will enable the administrations and the industry to measure, diversify, redistribute and even forecast the future. This will be their main mission in the future.

Information management is the cornerstone of any strategy of tourism management. This involves first and foremost prompt access to accurate and rich information concerning all types of tourism suppliers as this is the raw material with which to commercialize the destination in all media, to report to other levels of administration, and to assist visitors. It is vital that the destination has a central data repository. But the information must be appropriately connected, filtered and delivered through a network. The task of keeping this information is considerable and continuous, and it is essential to have technological tools to make the process as efficient as possible. In a few words, innovative and sustainable city tourism requires specific technological platforms: Destination Management Systems—DMS.
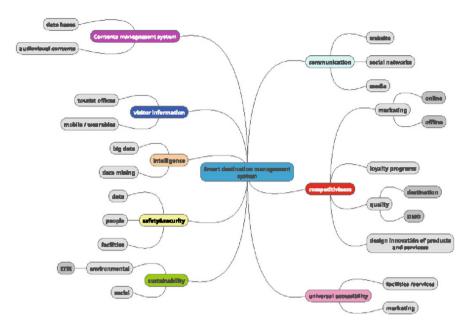
**Fig. 11.2** Model of destination management system. Source: created by the author

A DMS is an interactive network of information modules (Fig. 11.2), that goes far beyond of marketing tools and gets deep into the destination roots. In the heart of the DMS is the tourism assets database. This database contains information about all forms of accommodation, places to visit, events and tourism services that may be of interest to visitors planning a vacation in the destination. It should not only cover the basic types of services of accommodation, events, attractions, gastronomy, etc. but also the range of products at the destination, such as conferences and rooms for meetings, activities, entertainment, facilities, shops, transport, excursions, beaches etc. These core modules provide database administrators comprehensive control and monitoring, not only on the data catalogue and maintenance from providers, but also on all the means by which this information is published for external users. Each record in the assets database is a tab maintained by each supplier, so that it can always be readily updated.

In addition to the specific tourism database, the DMS requires inputs from visitor information centres, intelligence units, security services, sustainability indicators, marketing and communication managers and accessibility planners. In return, the system must be able to give them accurate, live information for their own purposes. This way, the whole network would guarantee to all the stakeholders the right information for the every decision making process. Hence, the tourism ecosystem would become 'smart', by taking advantage of technology "in creating, managing and delivering intelligent touristic services/experiences and is

characterized by intensive information sharing and value co-creation (Gretzel et al. 2015, p. 3).

### 11.3.3   People Are the Core Value of Cities

Cities must keep playing *the game of tourism* to reach a high quality of life. At continental level, tourism is included in the vision of the European Commission for 'the cities of tomorrow' (European Commission 2011). Together with high-quality functional user-oriented urban space, infrastructure and services, where cultural, economic, technological, social and ecological aspects are integrated, where housing, employment, education, services and recreation are mixed, tourism is as important as attracting knowledge-industry businesses, and a qualified and creative workforce.

In the center of the solution, the local partners must be involved through effective governance. Even more, local development policies "must have a long term sectoral approach in which tourism must also be positioned and supported" (UNWTO 2016, p. 9). The clever combination of people, leadership and ICT through the funnel (Boes et al. 2016), together with smart innovations mentioned in this chapter, and the interaction of all the actors that co-create the experience (Hsu et al. 2016), will create the adequate framework for smart, sustainable destinations. These cities will be able to deliver enhanced, personalized experiences.

Finally, the engagement of residents will be essential. DMOs have to focus part of their thoughts and action to maintain a positive relationship between the tourism industry and local residents. From the direct participation of the community in the strategic planning to their role as hosts, residents must be an essential part of the Destination Management System implemented by DMOs. They can contribute by giving feedback, discussing topics in organised forums, placing marketing material, contributing to the funding, holding regular conversations about the tourism value chain, communicating through social networks and both creating and sharing stories. Thus, people must be the core value of any future sustainable city tourism strategy.

## 11.4   Conclusion

For the last two decades, the tourism industry has boomed thanks to several deep social and technological changes. In particular, the available statistics show that city tourism has been heavily impacted by the increasing air connectivity and the adoption of short breaks. For many cities, that until then remained out of the traditional city circuits, tourism was the new goose that lays the golden egg. No other industry could be more likely to develop urban economies. Tourism is a clean industry, ideal to attract investments, to fill with new clients shops and restaurants, to use existing museums, parks and beaches.

This growth has been encouraged by every city in the world, whatever its size or location. Regional and local governments have poured money in tourism marketing budgets, aspiring to increase their visitor statistics. In addition, new infrastructures have been built to push on this growth: airports, cruise terminals, train stations, conference and exhibition centers, music halls, museums, theme parks, sports facilities, etc. Residents are happy to have new opportunities for investment and job creation. During the world financial crisis, tourism has been a resilient sector surviving where many others have failed. Thus, the confidence in this sector has expanded.

The combination of higher investment in services and facilities supply together with the increasing demand has produced a significant growth of tourism in many cities. However, the strategies and tourism policies applied followed the expanding rules of non-urban destinations: providing more supply resources where demand existed (or could be forecasted). The concepts of 'loading capacity' and sustainability were not considered. But cities are complex social ecosystems, where residents are as important as any other tourism asset. Residents and visitors share spaces and resources and the interrelation between both communities is an essential part of the tourism experience. In some iconic leading cities, this balance is broken and residents are rejecting the visitors. More cities will experience the same negative impact in the future, unless the challenges are analyzed and some alternatives are considered.

Experts have pointed out the main, common challenges for city tourism: safety and security; the digital revolution; new business models; and limits to sustainable development. In addition, the recent experience of leading destinations raised new questions toward the future. The main conclusion of all these think-tanks is that old recipes do not work anymore, and a new city tourism paradigm is required. The new strategies to cope with challenges will require a huge amount of information and indicators; fluent cooperation between stakeholders under new forms of governance; implementing measures for accessibility; adapting environmentally sustainable policies; and facilitating new forms of relationship between residents and visitors.

All together, the big amount of data and processes require process innovation and digitalization, integrating everything into a Destination Management Systems—DMS. As many cities are already involved in 'smart city' projects—including databases about security, resource management, traffic and transport, pollution, weather, events, etc.—they can take advantage of the work done, building the DMS above this platform.

DMOs might play a key role in future city tourism by managing DMS that establish the adequate framework for smart, sustainable destinations. Smart tools will enable cities to deliver enhanced, sustainable, personalized experiences for tomorrow's tourists. Thus, cities will become more competitive in a permanent changing scenario. Finally, beside technology and innovation, a new focus on people is essential. Both residents and visitors are core elements of tourism experiences. Only through their balanced interaction will determine the social sustainability, turning smart cities into wise destinations.

# References

Achana, F., & Augoustis, S. (2003). A practical approach to city tourism sustainability. In R. Schuster (Ed.), *Proceedings of the 2002 Northeastern recreation research symposium*. Newtown Square, PA: USDA Forest Service, Northeastern Research Station.

Airbnb. (2017). *Airbnb economic impact*. Accessed May 4, 2017, from https://blog.atairbnb.com/economicimpact-Airbnb/

Baker, D. (2014). The effects of terrorism on the travel and tourism industry. *International Journal of Religious Tourism and Pilgrimage, 2*(1), 9.

BBC. (2014). *Reality check: Is Oxford Street the world's most polluted?* Accessed April 25, 2017, from http://www.bbc.com/news/uk-politics-37131138

Becker, E. (2015, July 17). The revolt against tourism. *The New York Times.*

Boes, K., Buhalis, D., & Inversini, A. (2016). Smart tourism destinations: Ecosystems for tourism destination competitiveness. *International Journal of Tourism Cities, 2*(2), 108–124.

Brown, D., Stange, J., & Solimar International. (2012). *Tourism destination management: Achieving sustainable and competitive results*. Washington, DC: International Institute for Tourism Studies, the George Washington University.

Buhalis, D., & Amarangganna, A. (2014). Smart tourism destinations. In Z. Xiang & I. Tussyadiah (Eds.), *Information and communication technologies in tourism*. https://doi.org/10.1007/978-3-319-03973-2_40.

Butler, R. (1999). Sustainable tourism: A state of the art review. *Tourism Geographies, 1*(1), 7–25.

Carslaw, D. (2014, June 23–24). *Recent findings from comprehensive vehicle emission remote sensing measurements*. Annual Conference of the Environmental Research Group: "Frontiers in Air Quality Science", King's College, London.

Chang, T. C. (2000). Singapore's little India: A tourist attraction as a contested landscape. *Urban Studies, 37*(2), 343–366.

Chen, S. (2017). *China's 'airpocalypse' a product of climate change, not just pollution, researchers say*. Accessed April 25, 2017, from http://www.scmp.com/news/china/society/article/2079514/chinas-airpocalypse-product-climate-change-not-just-pollution

Cities Journal. (2014). *Is gentrification booming or harming tourism?* Accessed April 15, 2017, from http://www.citiesjournal.com/is-gentrification-boosting-or-harming-tourism/

Cócola, A. (2015, August 27–29). *Tourism and commercial gentrification*. RC1 International Conference on "The ideal City: between myth and reality: Representations, policies, contradictions and challenges for tomorrow's urban life", Urbino.

Colau, A. (2014, September 2). Mass tourism can kill a city – Just ask Barcelona's residents. *The Guardian*. Accessed May 4, 2017, from https://www.theguardian.com/commentisfree/2014/sep/02/mass-tourism-kill-city-Barcelona

Coll, J. M., & Illán, C. (2015, November). *Wise cities: Modelling the local contribution to sustainable development goals*. Notes Internacionals *CIDOB* 134.

Cooper, C. (2002, October 8–11). *Sustainability and tourism visions.* VII Congreso Internacional del CLAD sobre la Reforma del Estado y de la Administración Pública, Lisboa.

Cox, M. (2017). *Airbnb as a racial gentrification tool*. Inside Airbnb: The Face of Airbnb, New York City. Accessed from http://brooklyndeep.org/wp-content/uploads/2017/03/the-face-of-airbnb-nyc.pdf

Dans, E. (2016). *Fines, regulations and another tragedy of the commons*. Accessed from https://medium.com/enrique-dans/fines-regulations-and-another-tragedy-of-the-commons-c7856b561fb7

Dobbs, R., Remes, J., Manyika, J., Roxburgh, C., Smit, S., & Schaer, F. (2012). *Urban world: Cities and the rise of the consuming class*. McKinsey Global Institute. Accessed April 1, 2017, from http://www.mckinsey.com/global-themes/urbanization/urban-world-cities-and-the-rise-of-the-consuming-class

Dredge, D., Gyimóthy, S., Birkbak, A., Elgaard, J., Torben, M., & Anders, K. (2016). *The impact of regulatory approaches targeting collaborative economy in the tourism accommodation sector:*

*Barcelona, Berlin, Amsterdam and Paris* (Impulse paper no 9, prepared for the European Commission DG GROWTH, Aalborg University). Accessed from SSRN: https://ssrn.com/abstract=2853564

Dwyer, L., Edwards, D., Mistilis, N., Roman, C., & Scott, N. (2009). Destination and enterprise management for a tourism future. *Tourism Management, 30*, 63–74.

ECM. (2016). *Benchmarking report 2016*. Dijon: European Cities Marketing.

ECM. (2017). *Preliminary results from the forthcoming European cities benchmarking report*. Accessed March 25, 2017, from www.europeancitiesmarketing.com/tourism-european-cities-continued-grow-3-6-2016/

EEA. (1995). *Europe's environment: The Dobris assessment* (State of the environment report Nr.1/1995). Copenhagen: European Environment Agency.

EEA. (2015). *SOER 2015. European briefings: Tourism*. Copenhagen: European Environment Agency.

EEA. (2016). *Urban adaptation to climate change in Europe* (EEA report no. 12/2016). Copenhagen: European Environment Agency.

Europaforum Wien – Centre for Urban Dialogue and European Policy. (2014). *Vienna tourism strategy 2020*. Vienna: Vienna Tourist Board.

European Commission. (2001). *European governance: A white paper*. Brussels: Commission of the European Communities.

European Commission. (2011). *Cities of tomorrow, challenges, visions, ways forward*. Brussels: Directorate General for Regional Policy.

European Commission. (2016). *European tourism indicators system for sustainable destination management*. DG for Internal Market, Industry, Entrepreneurship and SMEs. Accessed March 28, 2017, from http://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators_en

Fayos-Solà, E. (2011). The road less travelled. Tourism and innovation: The UNWTO knowledge network. *Téoros, 30*(1), 143–147.

Fayos-Solà, E. (2015). Sustainability and shifting paradigms in tourism. *PASOS, Revista de Turismo y patrimonio cultural, 13*(6), 1297–1299.

Garcia, T. (2014). *Berlin, Barcelona and the struggle against gentrification.* Accessed April 10, 2017, from http://thisbigcity.net/berlin-barcelona-and-the-struggle-against-gentrification/

Gotham, K. F. (2015). Tourism gentrification: The case of new Orleans' Vieux Carre (French Quarter). *Urban Studies, 42*(7), 1099–1121.

Gretzel, U. et al. (2015). Conceptual foundations for understanding smart tourism ecosystems. *Computers in Human Behavior*. Accessed February 25, 2017, from http://dx.doi.org/10.106/j.chb.2015.03.043

Griffiths, S. (2014). *The most polluted street in the world is in London: Oxford Street has highest levels of nitrogen dioxide, claims expert*. Accessed April 25, 2017, from http://www.dailymail.co.uk/sciencetech/article-2688686/The-polluted-street-world-LONDON-Oxford-Street-highest-levels-nitrogen-dioxide-claims-expert.html#ixzz4g6r94lfY

Heeley, J. (2011). *Inside city tourism*. Bristol: Channel View Publications.

Hjalager, A. M. (2015). 100 innovations that transformed tourism. *Journal of Travel Research, 54*, 3–21.

Hsu, A., King, B., Wang, D., & Buhalis, D. (2016). In-destination tour products and the disrupted tourism industry: Progress and prospects. *Information Technology & Tourism, 16*(4), 413–433.

Humbleton, R. (2015, April 21–26). *From smart cities to wise cities*. Association of American Geographers (AAG), Chicago.

INVATTUR – Institut Valencià de Tecnologies Turístiques. (2015). *Manual Operativo para la Configuración de Destinos Turísticos Inteligentes*. Benidorm: Invattur.

Jones, J. (2014). *Oxford Street is one of the most polluted places in the world, and here's why*. Accessed April 25, 2017, from http://www.independent.co.uk/voices/comment/oxford-street-is-one-of-the-most-polluted-places-in-the-world-and-heres-why-9591620.html

Joppe, M., & Dodds, R. (1998, October 4–6). *Urban green tourism: Applying ecotourism principles to the city*. Travel and Tourism Research Association-Canada Chapter, Toronto.

Juul, M. (2015). Tourism and the European Union: Recent trends and policy developments. *European Parliamentary Research Service*. https://doi.org/10.2861/310682.

Kolb, B. (2006). *Tourism marketing for cities and towns: Using branding and events to attract tourists*. Oxford: Butterworth-Heinemann.

Kotler, P., Haider, D. H., & Rein, I. (1993). *Marketing places*. New York: Free Press.

LaGrave, K. (2015). *How terrorism affects tourism*. Accessed March 2, 2017, from http://www.cntraveler.com/stories/2016-03-31/how-terrorism-affects-tourism

Law, C. (1992). Urban tourism and its contribution to economic regeneration. *Urban Studies, 29*(3–4), 599–618.

Levy, D., Comey, J., & Padilla, S. (2006). *In the face of gentrification: Case studies of local efforts to mitigate displacement*. Washington, DC: The Urban Institute.

Lu, J., & Nepal, S. K. (2009). Sustainable tourism research: An analysis of papers published in the journal of sustainable tourism. *Journal of Sustainable Tourism, 17*(1), 5–16.

Mathieson, A., & Wall, G. (1982). *Tourism: Economic, social and physical impacts*. London: Longman.

Mazanec, J., & Wöber, K. (2010). *Analysing international city tourism*. Vienna: Springer.

Minoia, P. (2017). Venice reshaped? Tourism gentrification and sense of place. In N. Bellini & C. Pasquinelli (Eds.), *Tourism in the city – Towards an integrative agenda on urban tourism* (pp. 261–274). Heidelberg: Springer.

Murphy, P. E. (1985). *Tourism: A community approach*. New York: Methuen.

OECD. (2016). *OECD tourism trends and policies 2016*. Paris: OECD Publishing.

Oliveira, E., & Panyik, E. (2015). Content, context and co-creation: Digital challenges in destination branding with references to Portugal as a tourist destination. *Journal of Vacation Marketing, 21*(1), 53–74.

Onder, I., Wöber, K., & Zekan, B. (2017). Towards a sustainable urban tourism development in Europe. The role of benchmarking and tourism management information systems. A partial model of destination competitiveness. *Journal of Tourism Economics, 23*(2), 243–259.

Paskaleva, K. (2004). Sustainable urban tourism: Involving local agents and partnerships for new forms of governance (SUT-Governance) project legacy and the new challenges. *Technikfolgenabschätzung – Theorie und Praxis, 13*(1), 43–48.

Pearce, D. G. (1989). *Tourist development*. London: Longman.

Pearce, D. G. (1995). *Tourism today: A geographical analysis*. London: Longman.

Pedersen, A. (2002). *Managing tourism at world heritage sites: A practical manual for world heritage site managers*. Paris: UNESCO.

Quinn, B. (2007). Performing tourism in Venice: Local residents in focus. *Annals of Tourism Research, 34*(2), 458–472.

Rees, L. (2003). Super-gentrification: The case of Brooklyn Heights, New York City. *Urban Studies, 40*(12), 2487–2509.

SCITHOS. (2017). *About smart city hospitality (SCITHOS)*. Accessed January 20, 2017, from http://www.scithos.eu

SEGITTUR. (2015). *Libro blanco de los destinos turísticos inteligentes*. Madrid: Sociedad Estatal para la Gestión de la Innovación y la Tecnología en Turismo.

SET. (1991). *FUTURES I: Plan Marco de Competitividad del Turismo Español 1992–1995*. Madrid: Ministerio de Industria y Turismo.

Smith, O. (2016). *Pollution in Delhi hits new heights as tourists take smog selfies*. Accessed April 25, 2017, from http://www.telegraph.co.uk/travel/destinations/asia/india/articles/delhi-most-polluted-city-in-the-world/

Timur, S., & Getz, D. (2009). Sustainable tourism development: How do destinations stakeholders perceive sustainable urban tourism? *Sustainable Development, 17*, 220–232.

UNEP (United Nations Environment Programme) and UNWTO. (2008). *Climate change and tourism. Responding to global challenges*. Madrid: World Tourism Organization.

UNEP and UNWTO. (2012). *Tourism in the green economy. Background report*. Madrid: World Tourism Organization.

UNWTO. (2012). *Global report on city tourism, AM reports* (Vol. 6). Madrid: World Tourism Organization.

UNWTO. (2016). *5th global summit on city tourism*. Summary/Conclusions. Accessed May 4, 2017, from http://destination.unwto.org/sites/all/files/pdf/4_0_technical_conclusions_unwto_0.pdf

Vidal, J. (2014). *Boris Johnson admits London's Oxford Street is one of world's most polluted*. Accessed April 25, 2017, from https://www.theguardian.com/environment/2014/nov/13/boris-johnson-admits-londons-oxford-street-is-one-of-worlds-most-polluted

WoCo. (2016). *Beyond Magazine*. Tomorrow's Urban Travel (1). Wonderful Copenhaguen, Copenhagen.

WoCo. (2017). *Strategy 2020*. Copenhagen: WoCo.

WTTC – World Travel and Tourism Council. (2013). *Tourism for tomorrow: The WTTC perspective*. London: WTTC.

WTTC – World Travel and Tourism Council. (2015). *Environmental, social & governance reporting in travel & tourism: Trends, outlook and guidance*. London: WTTC.

Yeoman, I. (2010). Tomorrow's tourist: Fluid and simple identities. *Journal of Globalization Studies, 1*(2), 118–127.

Yeoman, I. (2012a). A futurist's perspective of ten certainties of change. In *Trends and issues in global tourism* (pp. 3–19). Berlin: Springer.

Yeoman, I. (2012b). *2050: Tomorrows tourism*. Bristol: Channel View.

Yeoman, I., & McMahon-Beatie, U. (2011). Destination brand challenges: The future challenge. In Y. Wang & A. Pizam (Eds.), *Destination marketing and management, theories and applications* (pp. 169–182). Oxfordshire: CAB International.