

# Conceptualising Smart Tourism Destination Dimensions

Kim Boes, Dimitrios Buhalis, and Alessandro Inversini

**Abstract** The term ‘smart’ represents a marketing word for all things that are embedded or enhanced by technology. One smart concept, which has gained momentum in recent years, is Smart City. It mainly focuses on how to increase the quality of life of citizens by using Information and Communication Technologies (ICT). This paper aims to explore which dimensions except technology are critical for the development of a Smart City and a Smart Tourism Destination. Following a multiple case study approach, this paper develops a framework for smartness in cities and tourism destinations. This exploratory research argues that leadership, innovation, and social capital supported by human capital are the fundamental constructs of smartness. Technology applications and ICTs are enablers, which support the core constructs of smart destinations. Results open the ground for discussing how to transpose ‘smartness’ to tourism and destination levels.

**Keywords** Smart city • ICT • Smart tourism destinations • Technology

## 1 Introduction

Over the last few decades the development of Information and Communication Technologies (ICT) introduced new technologies such as the Internet, Social Media, NFC, Augmented Reality, Ubiquitous Computing, and Machine to Machine (Gartner 2014). Recently, technologies such as Cloud Computing, the Internet of Things, and their application to complex logistic problems within cities, triggered a ‘new’ concept, in the public, private and academic sector alike (Kitchin 2013; Su et al. 2011). Smart City as a concept strategically introduces ICTs within an urban area to incorporate urban processes in contemplation of enhancing the competitiveness of the city (Caragliu et al. 2011) while simultaneously enhancing the quality of life for its citizens (El Segundo 2014). The concept especially gained

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popularity within the policy area and a large and growing body of literature has been published (e.g. Caragliu et al. 2011; Cocchia 2014; Nam and Pardo 2011; Su et al. 2011). Literature first and foremost, discusses the importance of the implementation of ICT for the successful development of a Smart City (Cosgrave et al. 2013; El Segundo 2014). Still, topics such as innovation, intellectual capital and redesigning internal operations are of importance as well (Cosgrave et al. 2013; Lombardi et al. 2012).

Recently, the notion of Smart Tourism Destinations emerged, expanding from the Smart City concept (Zhu et al. 2014). To date there is little research conducted in the field of Smart Tourism Destinations, where researchers essentially focussed on the importance of ICTs in destinations (Guo et al. 2014; Wang et al. 2013). This research analyses the fundamental constructs of a Smart City and aims to provide a holistic framework for Smart Tourism Destinations to take full advantage of ICT infrastructures and technological applications in order to supply co-creation of value and experiences for travellers and competitiveness and profit margin for destinations.

## 2 Literature Review

### 2.1 *Smart Cities*

Nowadays, a growing global movement of governments, and public and private agencies are incorporating the 'smartness' concept in contemplation of developing new policies and strategies to target sustainable development and economic growth (Center on Governance 2003). With the growing popularity of Smart Cities, scholars have tried to define this concept. Currently, multiple descriptions are available, which are used in different circumstances all around the world and there is no one-size-fits-all definition (Nam and Pardo 2011). The term 'smart' seems to have become a catch phrase for technology embedded within services and products (Center on Governance 2003) and often ICTs are positioned at the actual core of the Smart City concept (Nam and Pardo 2011; Su et al. 2011). Still, ICTs have long been linked to economic growth and ever since the development of computers people have expressed the importance of technology for economics (Avgerou 2003; Porter and Millar 1985).

Therefore, Caragliu et al. (2011) argue that ICTs are not the sole success factor for Smart Cities and issues such as innovation, creativity, human capital, and being able to signify the attractiveness of products and services should equality be included (Center on Governance 2003). Nam and Pardo (2011) emphasise the importance of a knowledge workforce, collaborative spaces, innovation, and social capital. Also Lombardi et al. (2012) stress the significance of human and social capital, innovation, and relationships and inter-connections that can be supported via a triple-helix model. Within this topic of Smart Cities, Cohen (2011)

conceptualised the Smart City Wheel, which defines six smartness dimensions important for the development of a Smart City including (1) Smart Governance, (2) Smart Environment, (3) Smart Mobility, (4) Smart Economy, (5) Smart People, and (6) Smart Living. Still, these dimensions may only be seen as outcomes when the fundamental constructs of a Smart City are in place. The underlying construct of the Smart City Wheel is therefore built on theories of regional competitiveness, social and human capital, ICT, infrastructures, and economics (Lombardi et al. 2012). Consequently, Caragliu et al. (2011, p.70) claimed that cities can be defined as smart “when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance”. Overall, a Smart City can be perceived as an “organic whole” and as a linked system where the people, visitors and citizens alike, are the most important aspect (Kanter and Litow 2009).

Still, the Smart City concept does not stand on its own and covers a variety of industries, including the tourism industry (Guo et al. 2014). Even though the main purpose of a Smart City is to increase the quality of life for its citizens, this research points out the need to focus on tourism as, in most of the cases, it is a source of income for many European cities (Taaffe 2014).

## ***2.2 Smart Tourism Destinations***

Tourism destinations are known to be amalgams of touristic products and services (Buhalis 2000) and they are perceived as complex systems which are difficult to manage (Fyall 2011). The interdependence of a high variety of stakeholders and industries complicates management while at the same time it is causing fragmentation within the control and development of the tourism destination. Besides, different values and cultures, and the interrelated impacts on the local population all make for a complex planning system within tourism destinations (Jamal and Jamrozky 2006). Initially, a tourism destination is structured with a supply and a demand side where the success of the destination is initiated by the development of the critical resources known as the six A’s (attractions, accessibility, amenities, available packages, activities, ancillary services). These A’s are amalgamated in contemplation of adding value to the touristic experience while simultaneously increasing the profit and benefits for the destination (Buhalis 2000).

To ensure the success of a tourism destination Ritchie and Crouch (2005) stress the importance of human resources and innovation in combination with cooperation and collaboration on a local and regional level. Similar, Prats et al. (2008) emphasise the importance of innovation while including the local community within the innovation process. An environment with high quality relationships is of utmost importance for knowledge development and therefore tourism entrepreneurs should harmonise their objectives to enhance the tourism experience (Murphy 1997). Cooperation is significant, still leadership conducted in a collective and network

manner is essential (Zehrer et al. 2014). Over the last two decades more information has become available on interdisciplinary integration, structural innovation, partnerships, and collaboration in order to successfully manage destinations (Jamal and Jamroz 2006). Still, greater attention is required to their implementation in tourism destinations (Jamal and Jamroz 2006). Cohen (2011) argues that especially the previous mentioned concepts are perceived as the cornerstones of smartness, which are enabled and supported via the integration of ICTs throughout the Smart City.

Up until now literature regarding Smart Tourism Destinations argues that such tourism destinations are incorporating ICTs within the development and production of tourism processes (Wang et al. 2013). Consequently, Smart Tourism Destinations can be perceived as places utilising the available technological tools and techniques to enable demand and supply to co-create value, pleasure, and experiences for the tourist and wealth, profit, and benefits for the organisations and the destination. Still, research conducted on the smartness of tourism destinations primarily focuses on the implementation of technology (Guo et al. 2014; Wang et al. 2013; Zhu et al. 2014). Only the theoretical paper of Buhalis and Amaranggana (2014) has touched the notion of building Smart Tourism Destinations as a generic framework of inherited concepts that incorporate competitiveness, sustainability, and inclusiveness bases on the concept of Smart Cities. Hence, this paper tackles the ‘smartness’ concept and aims to provide a holistic framework for Smart Tourism Destinations.

### 3 Methodology

In order to explore the factors influencing the smartness of a Smart Tourism Destinations, this paper has been conceived with an exploratory research nature based on case studies. Case studies are here utilised to identify which factors contribute to the development of a Smart City and Smart Tourism Destination. The case study methodology is often implemented when research is still in its early, formative stage (Benbasat et al. 1987). The Smart City field of research is particularly multidisciplinary and even though scholars have focused on this topic, this field is still rather young. In addition, this area of research is typically characterised by the constant change in innovation and technology. Hence, the case study methodology enables to gain knowledge, and to explore how three established Smart Cities develop their smartness. This study conducts a multiple-case study research as it allows for cross-case analysis and a more general overview of the research results (Bonoma 1985).

To date, there are different rankings available for Smart Cities. This paper uses first the “Mapping Smart Cities in the EU” European Parliament study, which conducted an in-depth analysis of the EU28 cities with at least 100,000 residents on their Smart City initiatives. The selected Smart Cities include Barcelona, Amsterdam, and Helsinki. Particularly, those cities have been selected as the cities yielding the most innovative Smart City solutions (European Parliament 2014).

**Table 1** Sources for case studies

Smart city	Case study sources
Barcelona	Bakici et al. (2013). A Smart City Initiative: the Case of Barcelona Department of Business Innovation & Skills (2013). Global Innovators: International Case Studies on Smart Cities European Parliament (2014). Mapping Smart Cities in the EU PWC (2014). Barcelona as a Smart City Lessons learned from the evolution of the concept and the influence in the city attractiveness.
Amsterdam	Amsterdam Institute for Advanced Metropolitan Solutions (AMS) (2014) Amsterdam Smart City (2014). Knowledge Centre Baron (2013). “Smartness” from the bottom up a few insights into the Amsterdam Smart City Programme Dameri (2014). Comparing Smart and Digital City: Initiatives and Strategies in Amsterdam and Genoa. Are They Digital and/or Smart European Parliament (2014). Mapping Smart Cities in the EU
Helsinki	ENoLL (2014). Helsinki Living Lab—Forum Virium Helsinki European Parliament (2014). Mapping Smart Cities in the EU Forum Virium Helsinki (2014). Smart City
	Hielkema and Hongisto (2012). Developing the Helsinki Smart City: The Rold of Competitions for Open Data Applications Schaffers et al. (2012). Smart Cities as Innovation Ecosystems Sustained by the Future Internet

Additionally, the sample selection is based on the ranking developed by Boyd Cohen (2014). This syndicates a high variety of global and regional rankings of Smart City components and, also in this ranking, Barcelona, Amsterdam, and Helsinki are located in the top 10 of Smart Cities in Europe.

The case studies presented are based on secondary research of existing government, academic, and Internet sources (see Table 1). For the analysis of these documents, this study conducts a content analysis for the separate case studies. A coding scheme is developed based on the analysis of secondary research on Smart Cities (Caragliu et al. 2011; Cocchia 2014; European Parliament 2014; Lombardi et al. 2012; Nam and Pardo 2011). The collected data has been summarised for the individual documents and subsequently coded using the coding scheme. This is followed by cross-case examination and within-case examination along with literature review to develop coding clusters and to support external validity.

## 4 Results

The analysis of the case studies indicate that Smart Cities are developed with the utilisation of four fundamental constructs including leadership, entrepreneurship and innovation, social capital, and human capital. The findings of this study imply that these constructs are supported and enabled via the implementation of technology applications and a strong ICT infrastructure.

## 4.1 Leadership

The findings of the case studies indicate that the leadership styles implemented in the three researched cities differ. Whereas Barcelona is implementing a top-down approach (Bakici et al. 2012) Amsterdam and Helsinki are both applying the bottom-up approach (Baron 2013; Forum Virium Helsinki 2014). For managing the Smart City of Barcelona, the council created the Urban Habitats group, which is situated under the third deputy major of Barcelona. This group has an umbrella function where it incorporates departments previously working independently such as environment, human services, energy, and water. In line with the Urban Habitats, the city also created a Smart City Personal Management Office, which is coordinating all the projects related to the Smart City (Department of Business Innovation Skills 2013). On the contrary, Amsterdam and Helsinki both created platforms based on partnerships between businesses, authorities, research institutions, and residents (AMS 2014; Hielkema and Hongisto 2012). The Amsterdam Smart City partnership, responsible for executing the Smart City project, was initiated by KPN (telecommunications and IT service provider), Liander (grid manager), Amsterdam Economic Board (collaboration between governmental agencies, research institutes, and businesses), Hogeschool Amsterdam (higher educational institution), and the Council of Amsterdam (AMS 2014). The City of Helsinki created the innovation unit Forum Virium Helsinki, which is a subsidiary of the City of Helsinki Group and a cooperation of companies, the City of Helsinki, public sector organisations, and citizens (Forum Virium Helsinki 2014). Even though the City of Helsinki is the owner of Forum Virium Helsinki, it is a diverse cluster including a high variety of different partners and members (Schaffers et al. 2012). Despite the difference in leadership styles, all three cities successfully created a central office (Urban Habitats, Amsterdam Smart City and Forum Virium Helsinki), who act as a go-between for ideas and initiatives, and incorporates all stakeholders to facilitate the coordination of ideas and projects (European Parliament 2014).

## 4.2 Entrepreneurship and Innovation

At the core of the Smart City notion lays entrepreneurship and innovation which is strongly influenced by the power of ICT (European Parliament 2014) and the promotion of innovation is one of the key objectives of all three cities. One prominent project is the 22@ Barcelona district (PWC 2014), where a variety of companies and institutions collaborate and cooperate on the development of urban innovations. The district functions under a knowledge-city model and focuses on topics such as, economics, mobility, green infrastructures, and inclusiveness where ICTs provide the infostructure for the development of innovations (Bakici et al. 2012). Another example of innovation is the Living Lab in Nieuw-West in Amsterdam where citizens, academics and developers are collaborating on products

and services enhancing the quality of life. Topics of focus within the Living Lab are e.g. new media, co-creative designs, and also tourism (Amsterdam Smart City 2014). The Living Lab of IJburg in Amsterdam is an area where a high variety of green energy and urban planning innovations are being tested (Dameri 2014). Amsterdam is putting great emphasis on the integration of technology on all urban levels. This is enabling a variety of innovations while simultaneously simplifying the collaboration between the various stake- and shareholders (Amsterdam Smart City 2014).

Within the previously mentioned Forum Virium Helsinki, the city is placing innovation at the core of three project areas, of which Smart City is one of them (Forum Virium Helsinki 2014). One of the larger innovation projects of Helsinki is the Mobile Application Cluster. Within this cluster participants have access to open data and are encouraged to take part in various innovation competitions. The openness of the government enables its citizens to gain knowledge about processes and developments through which they simultaneously have an increased awareness of the city. This drives competitiveness within the cluster and results in highly innovative ideas through a competitive community which is simultaneously attracting new firms to the area (Hielkema and Hongisto 2012). Another project is the Helsinki's Living Lab (Arabianranta) where companies, academics, and citizens collaborate in developing innovative solutions. It stimulates innovation in the field of citizen-centric service by implementing a demand and user driven innovation in which open data is used to address the needs of all stakeholders. It is owned by the people living in the area and supported by the Forum Virium Helsinki in terms of the development of digital services (Schaffers et al. 2012). All in all, entrepreneurship and innovation are core constructs of all three Smart Cities analysed, which is for the larger part empowered by the implementation of ICTs (European Parliament 2014).

### **4.3 Social Capital**

The creation of social capital is a fundamental construct of a Smart City (European Parliament 2014) and collaboration and cooperation are at the forefront of this (Caragliu et al. 2011; Lombardi et al. 2012). Barcelona, Amsterdam, and Helsinki are all emphasising the development of collaborative networks (Bakici et al. 2012; Dameri 2014; Forum Virium Helsinki 2014). Barcelona is implementing a triple helix model, incorporating public and private agencies, academics, and residents (Bakici et al. 2012) and promoting this amongst the stakeholders is of paramount importance to the city (PWC 2014). The Smart City Amsterdam is initiating a quadruple helix structure where private and public agencies as well as residents and academic institutions are involved. The city refers to itself as an organic ecosystem (Baron 2013) and is actively supporting the connection and collaboration between its residents, developers, academics and the public (Dameri 2014). The success of the Amsterdam Smart City platform can be found in its participative approach

where collaboration, co-creation, and co-development are of great importance (European Parliament 2014). Social capital and innovation are two intertwined concepts in Helsinki. Within the innovation forum the city is enlisting collaboration as one of its core concepts and competences. The innovation ecosystem and the network of participants is in particular present within the Living Labs and the Mobile Application Clusters (Forum Virium Helsinki 2014). Apart from the obvious collaboration between citizens and developers, Helsinki finds its smartness in particular in the collaborations between citizens, public and private agencies, and academics (Schaffers et al. 2012). Overall, the strategic objective of these projects is to improve the quality of public services based on the input of its residents and obtained via the platforms empowering social capital (European Parliament 2014).

#### **4.4 Human Capital**

The innovations that lead to economic growth and the increase of quality of life is underpinned by well-developed human capital (European Parliament 2014) and all three cities perceive their residents as the core of the Smart City strategy (Bakici et al. 2012; Dameri 2014; Hielkema and Hongisto 2012). In contemplation of enhancing the knowledge-based economy, Barcelona aims at developing the educational system within the city (PWC 2014). They created the Smart City Campus located within the 22@ district (Department of Business Innovation Skills 2013) where knowledgeable people have the opportunity of working closely together with academic faculties. Empowered by ICTs and networking companies, entrepreneurs can apply this collective knowledge to generate new business opportunities (Bakici et al. 2012). Only recently, Amsterdam developed the Amsterdam Institute for Advanced Metropolitan Solutions (AMS), which empowers the collaboration between the TU Delft, Wageningen UR (two Dutch universities), MIT, and the independent research group TNO (AMS 2014). Helsinki created the Arabianranta Living Lab which attracts creative people to the area and is becoming a hub for knowledge transfer, currently housing 13,000 students (ENoLL 2014). The success of innovative developments in Helsinki is very much reinforced by the city's human capital (Hielkema and Hongisto 2012). The analysis indicates that people are one of the success factors of becoming a Smart City as the participation of relevant stakeholders and residents is of utmost importance for the development of collaborations, the cross-linking of knowledge and consequently, innovation (European Parliament 2014).

## **5 Discussion**

Nowadays, smartness includes the innovative and transformative changes enabled via ICTs. Still, social factors should be considered as well and therefore it is of significance to understand the socio-technical view of smartness (Nam and Pardo



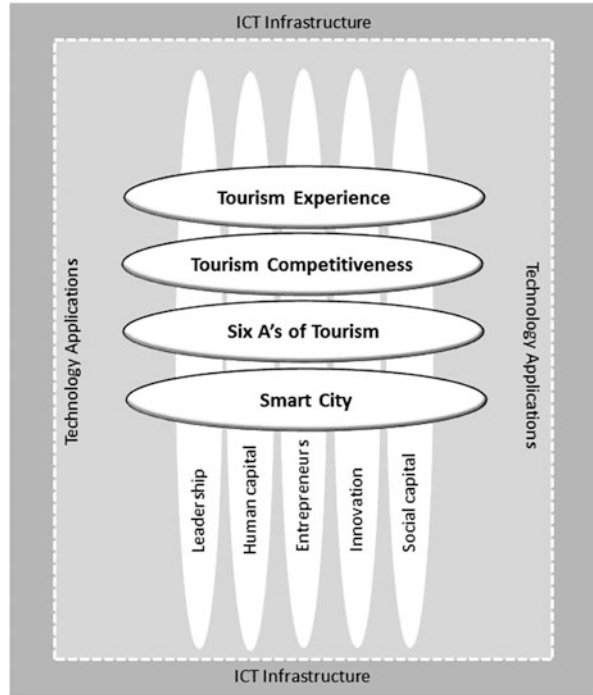
2011). Evidence from the best practises shows that cities strive to become a Smart City to increase the quality of life for their citizens while simultaneously increasing competitiveness (Caragliu et al. 2011). This is similar to the goal of tourism destinations where the visitor is in the centre of importance (Fyall 2011). Regarding the development of Smart Cities, Cohen (2011) introduced the previously discussed Smart City Wheel where the implementation of these dimensions is enabled via ICTs. Smart Tourism Destinations are amalgamations of touristic products (Buhalis 2000) and initiated out of Smart Cities (Zhu et al. 2014). Therefore, Smart Tourism Destination should be built on top of the constructs of Smart Cities. As with Smart Cities, Smart Tourism Destinations can increase their competitiveness (Ritchie and Crouch 2005) and with the implementation of technologies enhance its tourism experiences (Neuhofer et al. 2012).

Still, in order to imply the constructs of Smart Cities, a city should entail certain endowments that enable this. The analysis of the case studies point out four fundamental components influencing the smartness of a city and these should be explored by destinations that need to enhance their smartness. Figure 1 depicts an overview of the outcomes.

The first component is leadership. The case studies indicate that although there is no common leadership style responsible for the success of Smart Cities it is critical to have strong leadership and determination of authorities to deliver smartness. Whereas the three cities are implementing different leadership styles these differentiations may be explained by cultural differences, where Spain has a hierarchical-society and The Netherlands and Finland a rather decentralised one (The Hofstede Centre 2014). Within the tourism industry, destinations have to cope with the individual interests of the complex stakeholder environment, where competition plays a vital role (Jamal and Jamrozzy 2006). Nevertheless, leadership is critical for becoming a Smart Tourism Destination and the willingness and commitment to collaborate is one of the core competences of Smart Cities (European Parliament 2014). This corroborates with the research of Fyall (2011), and Jamal and Jamrozzy (2006) who argued that the short-term benefits of individual competition within a tourism destination will have a severe negative effect on the long-term development and sustainability of the tourism destination. Therefore, competition between stakeholders with the same vision should be eliminated (Fyall 2011) as social capital is of utmost importance for the competitiveness of a city and tourism destination (Caragliu et al. 2011; Neuhofer et al. 2012). Instead there should be co-opetition, where there is a combination of collaboration and competition offering greater opportunities (Ritchie and Crouch 2005).

In line with the importance of social capital are entrepreneurship and innovations, which are interrelated factors. The projects and Living Labs integrated within the analysed Smart Cities all aim for innovative developments, Innovations are vital for the competitiveness of a Smart City (Hielkema and Hongisto 2012) as well as to the competitiveness of tourism destinations (Pirnar et al. 2012) and are driven by human capital (Berry and Glaeser 2005). The case studies show that human capital is at the centre of the success of Smart Cities where knowledgeable people co-create on innovations and increase the competitiveness of the city. Kogan (2014, p. 9) suggests: “the true essence of smart comes down to people.” Destinations can

**Fig. 1** Framework for the dimensions of the Smart Tourism Destination



therefore develop their smartness by aligning the key dimensions leadership, social capital, innovation and human capital while using ICTs as the infostructure to facilitate for co-creating value/experiences for their visitors and margins/competitiveness for their industry (Ritchie and Crouch 2005). As demonstrated in Fig. 1, by enhancing the smartness of the Smart City dimensions (people, living, mobility, environment, economy and government), destinations create the conditions to support the development of Smart Tourism Destinations where everything is interconnected, co-created and value orientated via the implementation of technology applications and ICT infrastructures such as Cloud Computing and the Internet of Things (Nam and Pardo 2011). Synergies between interest and preference ensure that all stakeholders benefit from the process and that better experiences and quality of life is developed for all stakeholders that participate in the tourism destination.

Overall, the fundamental constructs of a Smart Tourism Destination are first of all human capital, which forms the base for the leadership, entrepreneurship and innovation, and social capital constructs. Subsequently, these are supported and enabled via technology applications and ICT infrastructures.

## 6 Conclusion

The concept of Smart Cities has gained in popularity over the last couple of years and recently the topic of Smart Tourism Destinations occurred (Buhalis and Amaranggana 2014). Where the focus of Smart Cities is on its citizens, Smart Tourism Destinations emphasise the importance of enhancing the tourist experience enabled via the integration of ICTs (Neuhofer et al. 2012). The integration of ICT within a destination solely will not be sufficient for becoming a Smart Tourism Destination. It is important to understand that Smart Tourism Destinations require the four fundamental concepts explored namely human capital, leadership, social capital, and innovation. Advanced ICT infrastructures such as Cloud Computing and the Internet of Things will provide then the essential infrastructure for developing a Smart Tourism Destination.

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