Cities xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Cities

journal homepage: www.elsevier.com/locate/cities

The smart city as a common place for tourists and residents: A structural analysis of the determinants of urban attractiveness

João Romão[a,*], Karima Kourtit[b,c], Bart Neuts[d], Peter Nijkamp[c,e]

[a] University of Algarve, Portugal
[b] Royal Institute of Technology, Sweden
[c] Adam Mickiewicz University, Poland
[d] Auckland University of Technology, New Zealand
[e] Tinbergen Institute, The Netherlands

ARTICLE INFO

Keywords:
Smart city
Livability
Sustainability
Creative city
Urban attractiveness
Urban management performance

ABSTRACT

This article presents a structural modeling analysis of the performance determinants of urban attractiveness, in terms of resident population and international tourism demand, in 40 global cities. The analysis focuses on the impacts of a diverse set of innovative drivers of urban value creation and sustainable solutions for city development (urban functions), which are collectively subsumed under the heading of 'sustainable smart city'. Recognizing that the dynamics and growth processes related to these urban functions may have different impacts on different types of stakeholders, potentially leading to the emergence of serious conflicts between guests/visitors and residents, we aim to derive model-based implications for urban and tourism management in the cities concerned in order to move towards the sustainable future city as '*a place 4 all*'. The results of our latent growth curve model confirm the existence of different impacts of urban functions on visitors' and residents' attractiveness. Cultural dynamics appears to be a major determinant for attracting new residents and supporting a strong international tourism industry. From an economic perspective, purely economic strength (in terms of absolute growth) appears to enhance city attractiveness for residents, while the dynamics observed in research and development activities influences the quality of employment instead of being a direct driver of population growth. While the social aspects of sustainability (framed under the concept of livability) and the urban environment typically exert higher impacts on urban attractiveness, accessibility appears mostly relevant for visitors. Our analysis suggests an uneasy balance between livability, environment, and population and visitor volume and growth.

1. Introduction

The unprecedented concentration of human population in urban settlements, as is witnessed in contemporary cities (containing nowadays more than 50% of the world population, and possibly reaching more than 70% by the mid-21st century) raises intriguing questions for sustainable urban management. Cities are faced with great challenges, in the context of new economic tendencies (e.g., the 'creative economy', with a rising importance of cultural values in urban production and consumption systems), demographic transformations (rural-urban and international migration, ageing societies), old and new environmental concerns (pollution and climate change), and far-reaching implications of new technologies (digital tools, with wide applications in different fields).

Modern cities are not only powerful engines for economic development and technological progress, but also – particularly in our age of global mass mobility – effective magnets for visitors (tourists and businessmen). Over recent decades, tourism – both domestic and international – has shown a sustained world-wide increase, becoming part of a new global lifestyle. More than half a century ago the founding father of central place theory, the German geographer Walter Christaller (1964), argued that tourists are driven by the goal of relaxing in undiscovered and unknown places characterized by unspoilt nature and absolute tranquility. Nowadays, however, with the mass emancipation of tourists, we observe the transition from a 'happy few' tourists to mass tourism in which large attractive cities play a dominant role (e.g., megalopolises, such as New York, London, Paris and Tokyo), but also medium-sized cities (such as Amsterdam, Stockholm and Geneva).

The present paper aims to map out in a quantitative manner the

* Corresponding author.
E-mail address: jfromao@ualg.pt (J. Romão).

https://doi.org/10.1016/j.cities.2017.11.007
Received 13 June 2017; Received in revised form 5 October 2017; Accepted 15 November 2017

complex force field influencing urban attractiveness for visitors' and residents', as manifested in the urban profiles of 40 large, globally distributed cities. The selection of these global cities stems from a multi-annual comprehensive database produced by the Mori Memorial Foundation in Japan. This database contains about 70 carefully identified and empirically tested city indicators, aggregated on six main functional dimensions (‘*urban functions*’), and offering a multi-dimensional profile of these cities. These six functional dimensions will be used in our econometric analysis – based on a latent growth curve model – of the above-mentioned complex force field of urban characteristics, population growth and international tourism flows.

By using this extensive dataset, including indicators that can assess the impacts of factors related to both contemporary smart economies (general economic conditions, cultural interaction, and research and development) and urban sustainability (livability, accessibility and environmental conditions), this work offers an original comprehensive analysis of the determinants of urban attractiveness for residents (measured by population growth) and tourists (measured by the evolution in numbers of international tourists) at a global or international level, offering new insights on the identification and measurement of the factors that determine the evolution and growth of a “sustainable smart city”.

This topic has the focus of multiple analyses in the last years, mostly related to territorial marketing and place branding (see e.g., Kavaratzis, 2004, 2005), by adopting the theoretical framework offered by the concept of corporate branding (Ashworth & Kavaratzis, 2009) and often taking into consideration the different perspectives of various stakeholders (see e.g., Merrilees, Miller, & Herington, 2012; García, Gómez, & Molina, 2012). These works are generally based on surveys expressing the preferences of different stakeholders for specific cities (see e.g., Zenker, Knubben, & Beckmann, 2010), in which network analysis is often a common and useful technique to address this question (e.g. Seven, 2014). Although our work also takes into consideration the different impacts of the various “urban functions” of cities on two different agents (in particular, residents and tourists), the importance of those functions as determinants of urban attractiveness is estimated through its quantitative impacts on population growth and tourism dynamics (as described in the next Section), rather than being based on stated preferences, as is pursued in most applied works in this field.

The paper is organized as follows: A literature review and the theoretical foundations for our analytical model are presented in the next section. A detailed description of the data and variables to be used is offered in the third section, along with the structure of a latent growth curve model. The model is developed in Section 4, and the main results obtained are presented. These results will be interpreted and discussed in Section 5, with a view to policy and managerial implications for urban and tourism management in a ‘smart city’. Finally, the main conclusions and a synthesis of findings will be presented.

2. Review and methodological framework

2.1. Creativity and the economy in the smart city

Our analysis focuses on the concept of a ‘smart city’, recently introduced and broadly utilized in contemporary urban studies, though often with different meanings. Although this concept was initially mostly linked to the utilization of (digital) technologies in urban management, our analysis assumes the broader perspective proposed by Caragliu, Del Bo and Nijkamp (2011, p. 70), that a city is 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”. This definition implies a multidimensional perspective, taking into consideration economic, social, environmental and technological issues, which will be included in our research, given the strategic relevance of smart cities for sustainable development, so as to prevent tourist destinations from a decline in their attractiveness or in their sustainable urban quality of life. The indicators used in our model for this urban impact assessment are largely in accordance with the general principles proposed by Balsas (2004) or, more recently, and at an institutional level, by the Organization for Economic Cooperation and Development (OECD, 2015).

For the purposes of our analysis, the economic dynamics will be framed within the broader perspective of creative economies, assuming the rising importance of innovation and the integration of cultural values into the production and consumption systems in contemporary economies (Currid-Halkett & Scott, 2013). In this context, cities play a central economic role, due to the agglomeration effects related to knowledge externalities arising from the self-reinforcing concentration of creative activities in urban areas, broadly documented in the literature (see, e.g., Arribas-Bel, Kourtit, & Nijkamp, 2016), including the analysis of emergent social conflicts related to the new economic dynamics and societal transformations (see e.g., Florida, 2017; Sassen, 2010; Scott, 2007). Thus, indicators related to cultural or R&D activities will also be taken into account in our study, both as central elements of urban socio-economics and as potential determinants of urban attractiveness.

In this context, it is noteworthy to observe that a significant part of studies on city attractiveness focuses on the urban factors which appear to exert a larger influence on the ability to attract a creative population, in accordance with the contemporary tendencies in global economies, as witnessed, among others, by Zenker (2009), Zenker, Eggers, and Farsky (2013) for 15 large German cities, with a special focus on the “competition” between Hamburg and Berlin, or by De Noni, Orsi, and Zanderighi (2014) for the specific case of Milan. It is also important to observe that this process of attraction of a new and creative urban population is not free of potential social and urban problems, as recently noted by Florida (2017) in his study on ‘urban crisis’.

2.2. Livability, accessibility and sustainability

Other important aspects in the analysis of smart cities – with clear impacts on the quality of life in urban centers – are the environment (pollution, air quality, water quality, CO_2 emissions, green areas, balanced landscapes, etc.); accessibility and mobility (within the city, but also related to its connectivity to other national or international urban centers); and livability (including aspects related to health care, working environment, safety or cost of living). Despite different interpretations and utilizations of the concept of livability in the recent literature, there is a general consensus about the importance of measuring the quality of life in its multiple dimensions, including social aspects (Lloyd, Fullagar, & Reid, 2016; Ruth & Franklin, 2014) or intangible factors related to the urban environment (Kashef, 2016). For the purposes of our analysis, these aspects will be framed within the concept of sustainability, including elements related to the ecological and social characteristics of cities, while their effective impact on the attractiveness of cities to people will be analyzed and measured as well.

Similar to the concept of livability, the idea of sustainability has been used with different meanings in the literature over recent decades. In fact, as stressed by Jong, Joss, Schraven, Zhan, and Weijnen (2015), a multitude of concepts – including sustainable, low-carbon, smart, resilient or knowledge cities – have been used recently, with different conceptual formalizations, but generally aimed at improving the living conditions and competitiveness of urban environments. These authors point out that sustainability is often linked to environmentally-oriented concepts (eco, green or low-carbon), while ‘smart’ is more used when analyzing cognitive processes of city modernization.

2.3. Sustainable smart city

The conceptual framework adopted in our study follows the concept of “Sustainable Smart Cities” recently proposed by Ahvenniemi,