

Preface

The United Nations declared in 2007 that, ‘For the first time in history the urban population will equal the rural population of the world’. Since then the march of urbanization has been relentless and across the globe there are now nearly 600 urban agglomerations of more than one million people, 70 in Europe alone. London has an urban population of nearly nine million, while megacities like Tokyo, Shanghai, Mexico City, and New Delhi have upwards of 20 million. The managerial and developmental challenges in cities of this scale are correspondingly huge.

Cities are centres of economic activity and drivers of growth. They generate wealth and prosperity. However, they are also complex challenges for governments because along with the benefits come negatives such as uncontrolled development, traffic congestion, waste management, complicated access to resources, and crime. And while the demand for services in cities is immediate, the tax revenues to fund them tend to lag behind. At the same time, globalization means that cities on opposite sides of the planet end up competing for capital, resources, and the brightest, most creative minds. In the face of these challenges, some cities experiment with new approaches to urban planning, design, finance, construction, governance, operations and services, sometimes under the broad banner of *smart cities*.

A smart city is one that develops in a manner that meets the needs of the future without compromising the ability of future generations to meet their own needs, so one of the enduring themes in this discussion is sustainability. It can, of course, be argued that city planners and managers have always tried to face issues responsibly, to square up to the future. But the vast scale and staggering complexity of the issues mean that new, innovative, integrated approaches are required. Cities must now try to become smarter, to improve their management and systems to ensure they become more sustainable, which means that a smart and sustainable city invests in human and social capital wisely, has citizens who participate in city governance, and has traditional and modern infrastructure that supports economic growth *and* high quality of life for its inhabitants.

Increasingly cities that want to become smarter seek to harness the power of ICT. As a result, much of the smart city literature puts technology at the centre of the “system of systems” for managing growth and sustaining development. ICT

innovations combined with exponential growth in networked, intelligent, and smart computers, sensor technologies, and ubiquitous personal devices like smartphones enable the creation of smarter electricity grids, smarter transport and mobility solutions, smarter city planning, smarter public service delivery, smarter buildings, and even smarter citizens.

Smarter citizens can exercise influence from the bottom-up and over the past few years a grassroots movement with particular priorities has emerged in parallel with the global technology companies that lead the way in developing tools and channeling discussions about the role of information technology in urban systems. The corporate vision is top-down, where the smart city is technology based with centralized infrastructure and governance. Smart citizens, on the other hand, have a more democratic, individualized, and decentralized world in mind, where technology is cheap or free, and rules loose—with non-proprietary technology built on open-source software in personal devices like smartphones and social networks. In the corporate view a smart city seeks to control, optimize, make efficient, and extract profit, while the bottom-up citizen version emphasizes sociability, transparency, efficiency in personal services, and entertainment.

City leaders perform a critical function in integrating these countervailing forces and the past few decades have seen novel experimentation as cities try to manage this balance productively. In practice, the big challenge to building smart sustainable cities is navigating the competing interests of diverse stakeholders. In that sense, it is a shared challenge: industry can offer valuable tools, while a diverse array of start-ups and citizens build cheap, fast, open-source alternatives.

The authors of the chapters of this book seek to illuminate the evolution of cities as policy actors, innovators, and development collaborators form the idea of the smart city.

The first article by Bennett, Perez-Bustamante, and Medrano is a progress report about smart cities in the UK. It shows that budgetary constraints faced by UK cities hamper their ability to implement smart city ideas and concludes that the main issues that cities face to becoming smarter are firstly political—only when both city and national governments agree on developmental policies and procedures will smart city initiatives begin to flourish. Mendoza Moheno, Hernández Calzada, and Salazar Hernández in Chap. 7 develop this line of thinking more generally by addressing the organizational challenges of building smart cities. They conclude that to build smart cities it is necessary to encourage flexibility in organizational structures, to energize innovative spirit and entrepreneurship, to enhance productive capacity for improved products and services, and to build an ethos of continuous organizational learning.

Vaquero-García, Álvarez-García, and Peris-Ortiz examine the fundamental role of smart cities in economic development through an extensive literature review that draws together the main themes of research. They discuss smart city initiatives in Spain and lay out guidelines and recommendations on how smart cities can positively affect economic development. Following on from this, Rodríguez-Núñez and Periañez-Cañadillas focus on how cities must become smarter and develop strategies to make them more globally competitive. Their arguments are based on

examples from the autonomous community of the Basque Country (ACBC). To be competitive, they say cities need to engage with the knowledge society, develop ICT strategies, and protect intellectual capital, all within a sustainability umbrella. Their real-world analysis concludes with a ranking, on multiple dimensions of how well Basque cities have performed in implementing smart city principles.

Rankings are also at the heart of Chap. 4, by Arroyo-Cañada and Gil-Lafuente who tackle performance evaluation bedevilled by problems in aggregating smart city dimensions across countries and cities. Such rankings are often used in Europe to compare city performance, for example on stimulating entrepreneurial activity. The analysis uses fuzzy subsets composed of 29 factors related to the economy, people, governance, mobility, environment, and quality of life to compare European smart city performance. They propose a multidimensional system to help cities and regional institutions select better smart city strategies.

Escamilla, Plaza, and Flores address issues of sustainability from a multidisciplinary perspective beginning with the philosophical underpinnings of why sustainability is important. They talk about the need to instil corporate social responsibility amongst firms, citizens, and also political leaders to foster social awareness and participation so that smart cities can be fully engaged and effective. They analyse three Spanish smart cities, in order to establish guidelines for sustainable policy development in cities. Their main conclusion is that environmental management, governance, entrepreneurship, and citizen participation are the mainstays of any smart city. Following up on this, Álvarez-García, del Río-Rama, Vázquez-Huerta, and Rueda-Armengot focus on the development of Cáceres as a smart city and compare it with the top smart cities in Spain. They conclude with an analysis which provides potential suggestions and recommendations that can help Cáceres and other cities to make progress as a smart city.

Chapter 6 by Aragonéz, Caetano Alves, and Blanco-González examines city branding in the context of four Portuguese cities. Their conceptual framework is based on a strategic management model. The research shows that leading politicians are critical element of city branding, but these leaders are hampered by election cycles and lack of a broad outward-focused marketing orientation. In short, city branding, to be done well and be sustainable, must also adopt smart principles. Marketing-based ideas also feature in Chap. 8 by de Esteban Curiel, Delgado Jalón, Rodríguez Herráez, and Antonovica, who describe the principles underpinning ‘smart tourism’ and the related concepts of smart hotels and airports. These ideas are shaped by the requirement of using traditional business tools to organize and execute sustainably.

Amo, Medrano, and Pérez-Bustamante focus on dimensions of the knowledge economy: internationalization, education, competitiveness, business intelligence, professional excellence, logistics, business potential, and entrepreneurship. They conclude that there is great potential to develop cities along smart dimensions through empowering citizens through the knowledge economy. However, this requires that city leaders be willing to engage in the knowledge economy and also have the political will to accept influence from the bottom up.

Chapter 10 makes a focused examination of supply chain challenges for smart cities. In this article Sánchez Martínez, Hernández Gracia, Martínez Muñoz, and Corichi García analyse supply chain issues for smart cities and show that smart cities grapple with increasing supply chain complexity, cost, and vulnerability to market forces. They show that the keys to integration between supply chain members are for top management to be fully invested and committed and for supply chains to be flexibly configured for market responsiveness.

Returning to London, Graham and Peleg envision smart cities as the outcome of a complex weave of influences, disciplines, and agencies acting to improve quality of life, sustainability, and efficiency. They demonstrate that the dynamic capability of new digital technologies plays a pivotal role in city development. But the rise of e-commerce means that traditional high-street retailers now face a global competitor with limitless product assortment, low prices, and a window display in the palm of almost every hand. While this might look like a mortal threat to high street retailers, local shopping habits are nonetheless sustainable and opportunities exist within the smart city construct for any retailer that can attract more “little and often” shoppers. They also suggest that local associations of retailers should build distinctive rather than differentiated high streets.

Durán-Sánchez, de la Cruz del Río-Rama, Sereno-Ramírez, and Bredis take a humanistic approach to examine quality of life issues in smart cities. Their study takes as a starting point the attractiveness of urban centres, which attract incomers. Their aim is to describe the current state of scientific research on sustainability and quality of life issues in smart cities. They conducted an extensive structured literature review and offer suggestions for further analysis.

In Chap. 14, Raya, García, Prado-Román, and Torres attempt to explain if residing in a smart city affects the value of our dwelling. Accordingly, they first describe if the physical characteristics and location of a dwelling affect the sales price, and then continue by analyzing if the buyer is willing to pay more for a dwelling if it is located in a smart city. This analysis is done by means of an estimated hedonic price model.

In summary, the articles here represent a small cross section of research into smart cities. Important themes have been identified as well as directions for further research. And big questions remain, for example, how can smart city solutions be adapted to cities in emerging countries where urbanization happens very quickly. Developing countries are no strangers to innovation, and sometimes embrace it at a faster pace than developed countries. For example, a great deal of banking and money transfer in East Africa is transacted using rather old-fashioned mobile phones because there are few bank branches, too little paper currency, too few offices for paying bills and so on. Mobile banking is a smart answer to real problems. There remains much to learn about smart city ideas and much to do to spread what we learn.

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