Opportunities, Values and Advantages: Smart Cities as platforms

Authors' names and affiliation

Sari Perätalo and Petri Ahokangas
Martti Ahtisaari Institute, Oulu Business School, University of Oulu

Abstract

Smart cities need new approaches for governing new open platforms. The purpose of this paper is to explore the business model (BM) concept in the public context. This research aims to contribute to the literature by exploring the core components of the platform BM from the city stakeholders' viewpoint.

Key words
Smart city, business model, platform

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Introduction

Due to globalization and digitalization, the city context is changing faster than ever. The digital age has increased needs for data collection, near-real-time data processing, digitally connecting people, and new forces such as sharing economy and crowdsourcing are entering the city context. For these reasons, cities are becoming smart(er). At the same time, this kind of rapid evolution creates many challenges for the development, operation, and economy of the cities.

In the evolving city context, cities need to figure out new ways for interacting when offering services to citizens (Walravens 2013) as new technologies create new possibilities and multiple business opportunities to be applied in public services of the smart cities (Díaz-Díaz et al., 2017). Furthermore, according to the IBM's Smarter Cities work (2009), after the economic crises in 2008-2009, cities have realized that they are in competition with other cities in ways they have never been before – they are now competing with the cities located on the other side of the world. They are not just competing for the investments and jobs, but also for the skilled workforce that can help to develop new economic strength. In addition, cities are struggling when trying to serve an increasing number of citizens without any extra resources (IBM, 2009). Thus, open, co operative platform way of working is increasing in importance. However, smart cities need new

approaches for governing these new open platforms, and the business model approach and its anchoring concepts can provide new perspective to cities' strategic thinking when it supports planning and implementing change (Bridgeland & Zahavi, 2009, p.25). The anchoring concepts of the business model selected to this study are opportunity, value, and advantage (Amit & Zott, 2001).

However, there is not yet a unified understanding of how the business model concept could be adopted into a public context, where the main purpose is not to chase economic growth as such, but rather to engage for public good. From this standpoint, the purpose of this paper is to explore the potential role of the open platform business model concept in a public smart city context by paying attention to the city stakeholders' viewpoints. We aim to explore how business model approach can be used to examine smart city digitalization.

This research aims to contribute to the business model discussions, especially from the perspective of opportunities, values, and advantages in the context of smart city platforms. A theoretical framework of the paper consists of the platform and business model literature with a focus on the smart city context. The data for the research is collected via an Internet survey through a group of European city representatives that are part of the Urban Agenda for European cities: Digital Transition network (https://ec.europa.eu/futurium/en/digital-transition).

Approach

Smart City context

The evolution of smart city can be divided into four phases: starting from 1990s ICT advancement, evolving to urban spaces that attract investments, to ubiquitous technologies in the cities, and latest to the solutions that support environmental sustainability (Anthopoulos & Fitsilis, 2014). During the last ten-twenty years two phenomena have emerged in the city context: global urbanization and digitalization (e.g. fast advancement of information and communication technologies, ICT) (e.g. Cocchia, 2014; Dameri & Cocchia, 2013). Furthermore, the cities' development focus has changed from competition to coopetition and towards a sharing economy (Perätalo & Ahokangas, 2018). The technological advancement and economic growth have improved well-being and created new job opportunities for cities, but also increased different urban planning, environment, and sociological problems in urban areas (Cocchia, 2014). In the 1990', Bollier (1998) proposed the concept of smart growth, which calls for new political practices for sustainable urban planning. Even though, there is not yet unified understanding what smart city is, we can say that the strategy of the smart city is to increase the quality of life in urban space by delivering better services to the citizens using newest technologies (e.g. Dameri & Cocchia, 2013).

However, smart cities are facing the consequences of municipal bankruptcies and public sector financial crises (Belissent 2010). Thus, improving productivity and selecting effective policies in the city sector is necessary. We argue, that in the context of smart city, we should move from monetary exchange towards knowledge, data, and service exchange, highlighting the role of platform economy principles.

Platform approach

Platforms are empowered by digital technologies and complex software, and platforms aim at connecting different actors in a seamless manner. Often, city platforms are open, meaning that the role of one single player decreases inside the platform. Accordingly, different platform actors can complement each other, and enhance platform innovation (Ceccagnoli et al. 2012). Many (research) also underline platform properties in open network structures (Fehrer et al. 2018).

Digital technologies have opened up new opportunities and helped to create platforms through which people, companies but also public utilities and cities can share their products and services (Ferreri & Sanyal 2018). According to Riley (2012), sharing or platform economies will change the way in which economic activities take place in cities. Legal scholars have argued that platform economies, that are based on sharing principles, are forcing city stakeholders to rethink what public interest and value means in the digital age (Finck & Ranchords, 2016). Thus, the question of opportunities, values, and advantages in the context of a wider public good is vital for understanding digital platform economies and planning a business model framework that works in practice.

Business Model and its grounding concepts

The three key aspects of the business model are opportunity exploration and exploitation, value creation and capture, and achieving competitive advantage (e.g. Amit & Zott, 2001; Teece 2010; Morris et al. 2005). At generic level, opportunity can be defined to be something positive to be reached (Holm et al., 2015), opportunity is strongly dependent on the external context (Atkova, 2018, p. 20). In other words, the business model can help to recognize and exploit opportunities that exist in the external environment (Atkova 2018).

The business model is a tool for value creation and capture (Amit & Zott, 2001). Value creation can be a source of competitive advantage, and competitive advantages are needed by organizations to become and remain competitive (Casadeus-Masanell & Ricart, 2010). Competitive advantage enables to create greater value for organization, shareholders, and stakeholders, and thus, it gives competitive edge related to competitors (Iivari, 2016). In the setting of technology based businesses in the smart city context, when identifying a journey towards establishing a sustainable competitive advantage, a dynamic perspective is needed.

Scalability, replicability (e.g. Giesen et al., 2010), and sustainability (e.g. Brocken et al., 2014) are also denominators of the business model, but they can also be regarded as an important outcome for the smart city (Alusi et al., 2011). In the smart city context, scalability can be defined as a capability to flexibly serve a changing number of citizens, replicability is a capability to copy good practices or outcomes elsewhere, and sustainability is a capability of being economically sustained and provide positive societal impact. In this research, these six components opportunity, value, advantage, scalability, replicability, and sustainability, will create together the business model framework for the smart city. The business model framework is depicted in figure 1 below.

Figure 1. Smart City Business Model framework

Research method and data collection

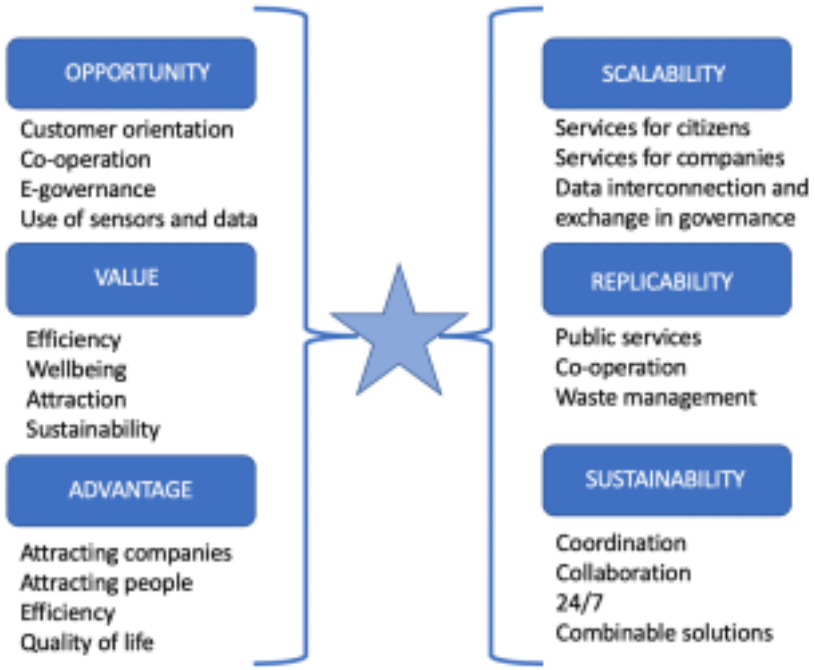
The research is focusing on emerging phenomenon, and it is explanatory in nature. In order to capture this richness of research, inductive qualitative interpretive case study method was found to be suitable (e.g. Eisenhardt, Graebner, Huberman, & Miles, 2007). The data for the research was collected through an open Internet survey, a questionnaire was sent to a group of European city representatives that are part of the Urban Agenda for European cities: Digital Transition network. There were 18 questions of which 12 were free text field questions, and six of them were related to keywords that describe the phenomena. Respondents could write 3 to 5 keywords related to each concept under study: opportunity, value, advantage, scalability, replicability, and sustainability. The survey tool was made both in Finnish and in English to make it easy as possible to answer. Altogether, 25 respondents' answers are analyzed. Most of the answers came from the city of Oulu (14), 5 from Helsingborg, 2 from Tallinn, and one answer from Eindhoven, Split, and Bucharest.

Key insights

Our respondents see that biggest digital opportunities in cities are related to customer orientation; co-operation with citizens, universities, and companies; e-governance; and use of sensors and data to optimize work, provide real-time information and feeling of safety. The city of Oulu and Tallinn respondents also see that the city already has the knowledge and technology ready for taking advantage of these opportunities. The city of Helsingborg and Eindhoven highlight the importance of sensors. These opportunities are important for the city because they increase the city's livelihood, competitive advantage, and cost-efficiency. The respondents see that there are several kinds of value what being a smart city could bring them. In all the cities the respondents think that being a smart city could increase the efficiency in the city context when the co-operation within the city would increase and deliver better services for both citizens and companies. Secondly, being a smart city would also increase wellbeing in the city if the citizens would be treated not just a service receiver, but as co-creators of services. Thirdly, being a smart city would increase the city's attractiveness in the eyes of companies and citizens. And fourthly, being a smart city would optimize city functions, and this would lead the development towards a more sustainable way.

Regarding competitive advantages, the tespondents see that being a smart city would create a competitive advantage for them by polishing the city's image, attracting new innovative companies to the city area, but also attracting innovative people to the city. Secondly, being a smart city would increase the efficiency of public services, and thus also increase the quality of life in the city.

In order to be scalable as a smart city, services should be provided for both citizens and companies 24/7, and especially health, education, and transportation services should be scalable. The city of Helsingborg highlights the importance of services targeted to elderly. Secondly, in order to be as scalable as possible, respondents see the importance of data interconnection and exchange in city government processes. Regarding replicability in smart city context means cost savings and more efficiency for the city itself, and it also makes citizens' life easier if most or all public services are working with the same principle. The city of Tallinn highlights the importance of co-operation with universities and other cities when it comes to replicable smart city solutions. The city of Helsingborg highlights the importance of replicability when it comes to waste management, energy-saving solutions. All respondents see that coordination and collaboration play an important role in sustainable smart cities. According to the respondents, it is important to share the best practices and avoid building any silos in cities. Created and implemented smart city solutions should not be dependent on time or place. Thirdly, implemented solutions should be also combinable to other already existing solutions to follow sustainable principles. Keywords describing all the above mentioned six aspects are depicted in the figure 2. below.



Discussion and conclusions

Our data indicates that in the context of Europeans cities most of the opportunities can be exploited via co-operation, highlighting the relevance of open platform approach in city context. The importance of connectivity (communications networks) is recognized among researchers as well (e.g. Morandi et al. 2016). Furthermore, adopting the business model in a public smart city

context enables city governance to focus on the essential aspect of their responsibilities and to reduce complexity when the focus is on relevant information (Wirtz 2016, p.14). We can say that a well-planned business model can increase the sustainability of competitive advantages and create long-term success (Wirtz 2016).

The customer-oriented view is clearly visible in the value component when the keywords are efficiency, wellbeing, attraction, and sustainability. The value can be co-created and co-captured with companies, citizens and the city. Thus, connectivity is important (e.g. Morandi et al. 2016). Value co-creation increases cost savings when work and resources are divided. When it comes to the competitive advantage of the city, both companies and individual people play an important role. They bring know-how to the region. Efficient city functions and increased wellbeing can be the forces that keep companies and educated people in the city.

Our aim in this paper has been to explore how business model approach can be used to examine smart city digitalization. Indeed, digitalization has created new business opportunities by transforming and opening up the traditional city context, increasing the amount of urban data and enabling easier co-operation between different actors. Our data highlights the importance of co operation, collaboration, exchange, and openness, making the open platform perspective in a smart city context is highly relevant (e.g. Fehrer et al. 2018; Ferreri & Sanyal 2018; Ceccagnoli et al. 2012). However, these findings are not without ambiguity. The relatively small size of samples can limit the reliability of the research.

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