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Unlocking synergies: Smart cities and the dynamic business model approach

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Interviewed by Christian Nielsen

Abstract

This interview comprises the opening part of a doctoral defense in which Christian Nielsen acted as Sari Perätalo's opponent. The defense took place on November 24, 2023, at Oulu Business School, Finland, and the topic was "In search of a business model approach for smart cities." After the discussion conveyed in this paper, the doctoral defense focused on specific research outcomes, methodologies, and theories and illustrated that the PhD candidate indeed was extremely knowledgeable about the subject and should be awarded the degree of a PhD.

Keywords

Smart City, Business Model Approach, Smart City Business Model

Christian Nielsen (CN): Maybe first a short introduction to what a smart city is, and how is it different from a non-smart city.

Sari Perätalo (SP): There are several definitions of “smartness” in both academic and practical settings (Dameri, 2013). The multiplicity of definitions is because smart city development is a bottom-up phenomenon, by which I mean that technology leads it. There are often no well-defined strategic visions, governmental rules, or policies within cities when it comes to technological developments (Dameri & Cocchia, 2013). This is one of the reasons cities are unable to transform into actual smart cities (Ruhlandt, 2018). For that reason, there is a need to take the governance aspect into account when it comes to smart cities. Most smart city definitions highlight the role of technology, but it is noteworthy that smart solutions can also be non-technical (Keshavarzi et al., 2021).

To answer what a smart city is, I define it in my doctoral dissertation as “a digital business ecosystem in which city governance is the key player”(Perätalo, 2023). I argue that city governance’s role is to define how a city creates value for its various stakeholders, including citizens and businesses. This highlights an ecosystemic aspect, because there are several stakeholders in the city context, and an ecosystemic focus introduces the importance of the organization’s internal and external communication and collaboration.

CN: Is there such a thing as a stupid city?

SP: I’m sure that no city wants to be labeled or called stupid! Cities are complex entities (Perätalo, 2023), and every city has strengths and weaknesses. Weaknesses may be related, for example, to issues such as poor urban planning, a deficient infrastructure, or economic challenges that may have a huge impact on the city’s overall functionality. Quite often these weaknesses are related to historical factors and systemic issues (Honeybone, 2018).

CN: What is the interface with other concepts such as Society 5.0

SP: There is a wide range of different “smart concepts”—for example, the digital city, the ubiquitous city, the smart region, the smart building, and society 5.0 (cf. Rosenstand et al., 2023), just to mention a few. To put it briefly, these concepts differ in their scope and emphasis and have in common that each of them aims to leverage technology for positive societal outcomes.

CN: How widespread are “smart cities” in the global context?

SP: The answer depends on how the smart city is defined (see, e.g., Nam & Pardo, 2011). As my answer earlier showed, there is no unified understanding of how the smart city is defined. However, I think that if you go and ask any of the cities in the world whether they’re smart, the answer is going to be yes.

Some organizations measure and rank smart cities, and one of them is IMD. According to the IMD Smart City Index (2023), there are 141 smart cities in the world. However, this number changes as more cities adopt smarter digital technologies and development strategies.

CN: What is the current development phase of a “good” smart city, and what are the aspirations?

SP: Quite often, smartness is related to the use of technology in cities (see, e.g., Hall et al., 2000), but smartness is much more than just adopting new technologies (Jiang, 2021). Technologies are adopted in cities to enhance operations, collect data, and make citizens', city organizations, and the whole ecosystem's lives easier (cf. Lingens, 2023). In my opinion, one of the most important factors of a good smart city is citizen-centricity. Technologies should be used in the city context to recognize citizens' and businesses' needs (Perätalo, 2023). This notion has also been highlighted in earlier research (see, e.g., Ruohomaa et al., 2019), and I see this becoming more and more visible in future smart city development.

The discussion about the “good” smart city also highlights the role of smart governance. Smart governance should be about collaborating with citizens, businesses, and other ecosystem stakeholders (Bolívar & Meijer, 2016; Perätalo, 2023). Concerning the old regional policy-driven governance, collaboration and communication can drive innovations more flexibly (Honeybone, 2018; Perätalo, 2023). The increasing importance of collaboration and communication is leading smart city development towards a more open, ecosystemic, and platform way of working (Perätalo, 2023).

CN: What will business model innovation look like in a smart city context?

SP: Smart city business models have gained a lot of interest in different research fields (Mora et al., 2017). The European Commission (2022) has also stated that cities need business models. Despite this widespread interest, there is still no common understanding of what the business model means in the smart city context, and how it could be used in practice (Perätalo, 2023).

There have been several attempts to utilize the business model canvas created by Osterwalder and Pigneur (2010) in the city context (see, e.g., Anthopoulos, 2017; Walravens, 2012, 2015). However, the business model canvas provides a rather static view, and it's unable to respond to the demands of a fast-changing and complex digital city context. Previous research also supports this notion and has shown that the business model canvas is unsuitable in the dynamic city context, but it is commonly used because it is familiar to both city representatives and researchers and is thus easy to use (Díaz-Díaz et al., 2017b). That's why I think it's fair to say that there is no unified understanding of what the central topics are related to the use of business models, and there is still no business model theory that works in a smart city context. This was the starting point of my doctoral dissertation.

Business models can be seen in three different ways: as actions, events, and actors (see, e.g., Ahokangas & Myllykoski, 2014; Atkova, 2018); as resources, structures, and positions (see, e.g., Osterwalder & Pigneur, 2010); and as approaches, processes, and purposes (see, e.g., Magretta, 2002). Until now, the business model has been seen in the smart city context only as resources, structures, and positions, but in my dissertation, I

took another approach, understanding the business model as an approach in the smart city context.

Understanding the business model as an approach reveals three antecedents: opportunity; value; and advantage; and three outcomes: scalability; replicability; and sustainability for the business model (Ahokangas et al., 2023; Lecocq et al., 2023). In a nutshell, rather than creating practical frameworks, the business model approach encourages thinking about the kind of opportunities there are in the city context, what kind of added value these opportunities could bring to all the stakeholders of the smart city, and what kind of competitive advantages cities could gain. It's also important to take into account that opportunities should always be scalable—for example, if the number of citizens increases. The same principles can be copied for other city services and functions. Opportunities should also be economically and technically sustainable (Perätalo, 2023).

I argue that seeing the business model as an approach encourages collaboration and communication inside the city organization, and by doing so can help break down siloed organization structures. In my dissertation, I present a dynamic smart city business model approach, which includes four theoretical categories and their conceptual denominators. The theoretical categories are called: platform digitalization; nominated by citizens; city organization and city ecosystem; blurring boundaries nominated by sectoral cooperation and communication; contextual governance nominated by commerce, context, content, and connection; and socio-technical change nominated by the physical and technical infrastructure. Previous research (see, e.g., Cohen, 2013) has separated smart city operations into several different vertical dimensions and categories, and the business model approach aims to create only four horizontal theoretical categories to enhance boundary-spanning cooperation and collaboration in the city context.

CN: Can smart city developments create new opportunities that might lead to new BMs?

SP: Smart city developments can create numerous new opportunities (Díaz-Díaz et al., 2017a) which create added value and competitive advantages for citizens, city organizations, and the whole city ecosystem. As previously suggested, smart city development is becoming a more open, collaborative, and communicative way of working. New opportunities in smart city ecosystems and platforms can be found by sharing information between the stakeholders (Hirvonen-Kantola et al., 2016).

CN: Concerning the general perception of recent developments, what are the apparent research gaps we need to explore further in the relationships between smart cities and BMs?

SP: Even though the concept of smart city business models isn't new—it was mentioned for the first time as early as the 1990s (Albino et al., 2015)—it seems that most of the research is bogged down in the idea that working with business models in the smart city context means using a practical model, framework, or matrix. In my opinion, there's a

need to take business model theory building, especially in the smart city context, to the next level and think about what else a business model could be, and how it could be used. The importance of cooperation and collaboration in the smart city context also challenges the traditional business model logic (Fehrer et al., 2018).

As I said, we're seeing the business model as an approach. We came up with a discussion about business model antecedents and outcomes (Ahokangas et al., 2023). In my opinion, we should pay special attention to the business model outcomes: scalability, replicability, and sustainability in the city context. In practice, this means, for example, investigating the smart city initiatives in more detail, and examining the long-term impacts of smart city solutions on citizens, city organizations, and the whole city ecosystem level. When talking about the ecosystem level, public-private partnerships in smart city projects and business model development need more research.

CN: Which types of methodologies do you see emerging that could enable the closing of research gaps or even producing whole new research themes?

SP: Most smart city research is technologically oriented, and there's a need for qualitative research that aims to understand the long-term effects of smart city development. In addition, I see multidisciplinary research in a smart city context as important. A holistic understanding of smart cities can be gained by combining knowledge from technology, urban planning, the social sciences, and business.

The role of collaboration and communication is important in a smart city context. Therefore, participatory action research is highly relevant in the smart city context when it engages various stakeholders, meaning citizens, businesses, and governance people, in the research process, aiming to jointly identify important topics, develop solutions, and implement change. Action research enables the testing of complex and interlinked conceptual frameworks that cannot be separated from the evolution of individual concepts (Eden & Huxham, 2006).

CN: In what ways has and will the increased level of uncertainty (post-pandemic world and grand challenges) challenge BMI in theory and practice now and in the future? How does the context of smart cities play into this?

SP: I think in today's fast-developing and uncertain world, both businesses and public organizations like smart cities should be prepared to react to changing conditions. In practice, this means there is a need for a dynamic strategic development tool, and the business model could act as one (Iivari, 2016).

Business modelling in the smart city context also enables scenario planning. The business model isn't only helping to recognize opportunities, but it can help recognize potential threats as well – one person's threat is another's opportunity (Atkova, 2018; Zott & Amit, 2010).

CN: How do we need to include/consider policy, ethics, grand challenges, and (which) other meta-impacting factors in the future BMI, considering the developments of smart cities?

SP: In smart city development policy, ethics, and sustainability, both in the economy and environment, play a vital role (see also Ricart, 2023). For example, when it comes to policy, it's important to promote standardization among different smart city systems (Perätalo et al., 2023). This makes seamless integration and communication between different technologies possible in the city context. Second, security and data privacy need to be considered as robust policies in the smart city context. Third, there's a need to develop policies that encourage smart city governments, businesses, and citizens to collaborate. A clear framework for public-private partnerships is needed in an ecosystemic smart city context. Collaboration both inside and outside the city organization with citizens, businesses, and other cities locally and globally can help create more effective and scalable solutions.

When it comes to ethics, it's important to make sure that smart city initiatives are inclusive and accessible. It's also important to keep in mind that certain groups, for example, the elderly, may not be able to use digital services.

From a sustainability point of view, one of the articles in my dissertation, which is still in the publication process, revealed that digitalizing public services could help cities reduce CO₂ emissions when citizens can get the services they need online, for example. In addition, sustainability in the city context also means long-term planning when it comes to adopting digital technologies. In practice, this means the technologies should also be usable in the future and able to scale and update according to changing needs. In my opinion, the business model approach can help smart cities chart a plan for the future and pay attention to policy, ethics, and sustainability matters.

CN: What do the managers of companies need to understand to be able to capture value from the smart city context? What do they need to understand to avoid being left on the platform?

SP: One of the most important things in my mind is to understand that working with public entities is different from working with private companies. In practice, I mean that cities are huge organizations, and it takes time to make decisions (cf. Massa, 2023). There are also a lot of regulations related to technologies and data management in the public context, for example (Nielsen, 2023).

Cities should be flexible but need a certain level of control over the public services they offer (Tilson et al., 2012). In other words, cities can't take huge risks when it comes to developing new services or solutions.

As I said, smart cities are ecosystems, which means there's no such thing as a one-stop shop principle in the public context. It is necessary to collaborate with city government, other businesses, and technology providers and have an understanding of how the ecosystem works. It's important to know that ecosystems are rather self-organized and vague entities, and that's why traditional managerial concepts aren't valid in this context (Göthlich & Wenzek, 2004; Hearn & Pace, 2006).



CN: What new/altered roles will businesses, society, state/government, ecosystems, policymakers, and others take in such a future state?

SP: That's a broad question! Based on my dissertation's findings, the success of smart cities relies on the collaboration and communication between different stakeholders, meaning citizens, the city organization, and the whole city ecosystem, including businesses. The city government should set policy frameworks, and businesses should drive innovation and develop technologies that increase citizens' overall quality of life. Citizens should be active in telling both cities and businesses what kind of needs they have. Such collaboration is necessary for creating sustainable, inclusive, and technologically advanced smart cities.

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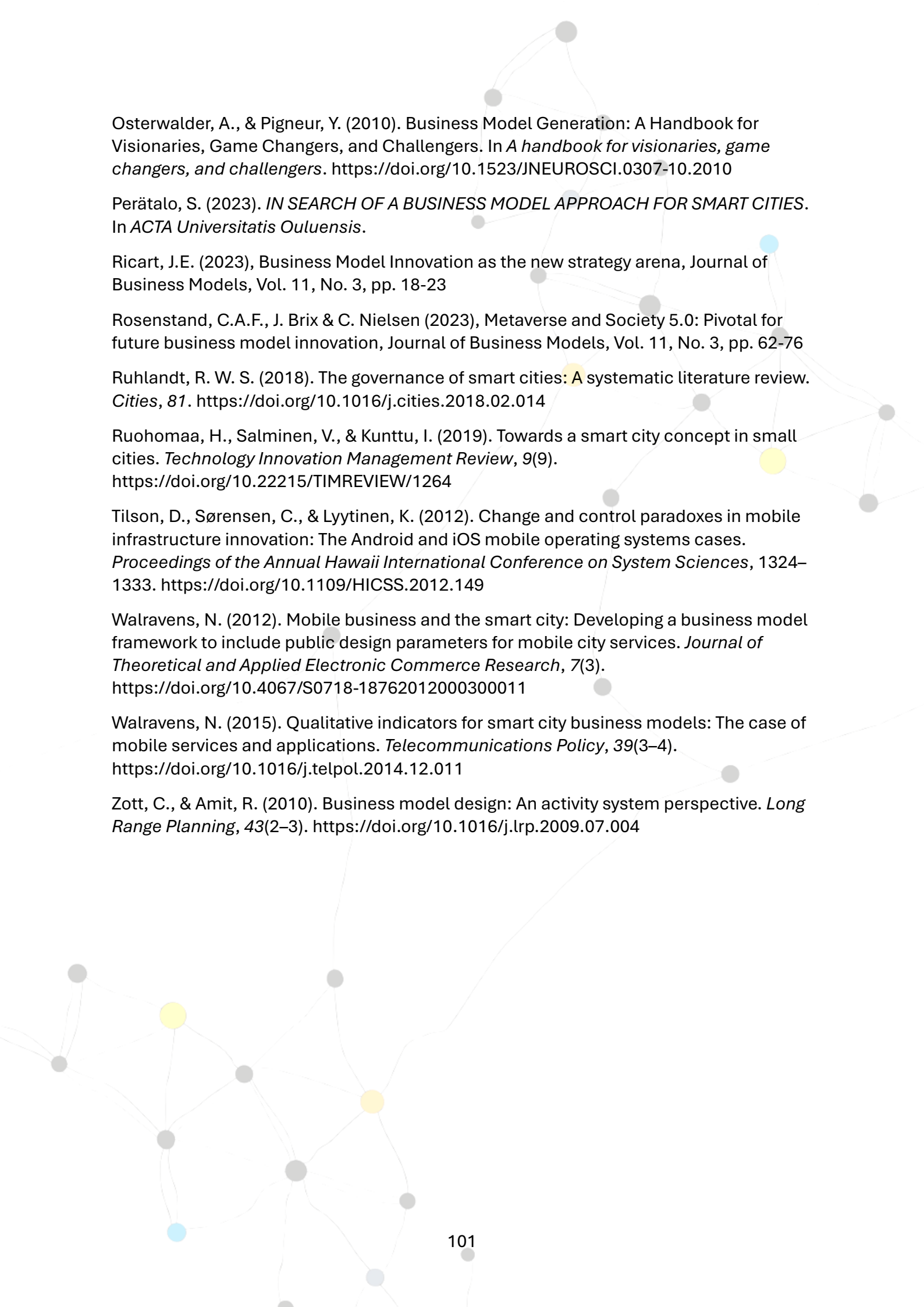
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