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## Business Model and Smart City, a Literature Review

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**Abstract:** Business Model literature is flourishing and has already dealt with various fields of research. Subjects such as new technology, innovation, sustainability or social innovation have received particular attention. In the context of specific territory/city, those subjects are genuinely linked to the Smart City concept. Besides, Business Model research considers increasingly the Business Model within its ecosystem. Therefore, the context of SC ecosystem with its multi-stakeholders could highlight important points for the Business Model literature. As a first step to go deeper into the field, the literature review outlined in this paper, reveals several gaps of knowledge when linking Business Model and Smart City and, suggests paths for further reflexion or future research.

**Keywords:** Business Model; Smart City; Literature Review; Sustainability.

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### 1. Introduction

Over the past few years, a great Business Model (BM) has been always more considered as essential for any organization. Indeed, the BM is now complementary to the organization's strategy (Wirtz *et al.*, 2016). BMs are typically studied at different level of aggregation, starting from product through the organization to industry level. Although some literature underlines the network and the partnerships influences on the BM, none or very few literature tackles the link between BM and its ecosystem at territorial/city level.

An approach that is now widely spread to apprehend a territory is the concept of Smart City (SC). Considered as an answer to many challenges linked to the steadily growing urban population and environmental issues, SC's should lead to – economic, social & environmental – sustainability (Caragliu, Del Bo and Nijkamp, 2011). As evidence, United Nations are calling for 'Sustainable cities

and communities' in their eleventh Sustainable Development Goal (SDG), hoping for cities to become more resilient, inclusive and safe.

Both BM and SC are promising concept in the management literature. Since the BM are a real opportunity for organizations, as a complement of strategy, the application of the concept to the SC approach is a way worth exploring to understand how to apprehend better the role of different stakeholders at territorial/city level. Therefore, we conducted a systematic literature review to define the current knowledge at the intersection of BM and SC approach and to understand what would be the requisite for future research.

## **2. Business Model and Smart City – Concept and Literature**

- **Business Model**

The concept of BM became important over the 1990's (Zott, Amit and Massa, 2011). Although, the term appeared the first time in 1957 with Bellman (Wirtz *et al.*, 2016), it was then, cited without driving line. The 2000's heralded the era of BM based on technology and strategy-oriented. Afterward, the BM concept taken up by the organization-oriented researchers took a more abstract form and the focus went beyond the limit of the company itself. At this point, there is still no consensus on BM definition. However, for a great number of paper, BM is about how an organization create and capture value (Osterwalder *et al.*, 2010 etc) Moreover, it seems that it has come to an agreement to consider BM as a unit of analysis that is different from the strictly strategy field.

Then, literature reviews (Zott, Amit and Massa, 2011; Wirtz *et al.*, 2016; Massa, Tucci and Afuah, 2017) have classified the concept according to different criteria such as the research field, the aggregation level or the interpretations of the function of the BM. Recent research showed also that BM is an important concept in term of development of new technology, social innovation or sustainability in organization (Massa *et al.*, 2017). A last area of research which seems important to underline is the network-oriented view. Indeed, BM can fully differ depending on partnerships and external interactions (Wirtz *et al.*, 2016).

- **Smart City**

Diverse understandings of the concept of SC exist today. However, they are usually based on three components – people, technology and institution – (Nam and Pardo, 2011) and they all involve a 'technology driven method' and/or a 'human driven method' to different extents (Kummitha and Crutzen, 2017). In a view of including most realities, SC will be defined as the mix of both technology and human driven method with a final objective of (triple)

sustainability. Indeed, beyond the economic sustainability, social and environmental sustainability are central to SC development (Caragliu, Del Bo and Nijkamp, 2011). In addition, SC projects are usually structured around six dimensions (Giffinger, 2015)– smart people, smart economy, smart mobility, smart living, smart environment, smart governance – which are also commonly use as indicators to assess progress made by territories/cities.

When it comes to the strategic point of view, SC are generally considered as *hybrid models combining democratized open innovation with central city support, coordination and monitoring* (Ben Letaifa, 2015, p. 1415). Therefore, the development of SC on territories/cities has to consider the whole ecosystem and requires more advanced model allowing multi-stakeholders' involvement – private sector, citizens, academics, governments –. In this context, the triple helix model (Leydesdorff and Deakin, 2011) or quadruple/quintuple innovation helix models (Carayannis and Rakhmatullin, 2014) show how different actors on a territory are complementary, however, it focus mainly on information and knowledge sharing.

- Smart City and Business Model

At this stage, further research is needed to comprehend how the BM concept can help develop SC. The SC ecosystem is a novel context for all stakeholders – private sector, citizens, academics, governments – (Díaz-Díaz, Muñoz and Pérez-González, 2017). *As the stakeholders of novel ecosystems adopt a different role in the value chain, they are forced to reshape their business models; therefore, smart cities also raise new business models* (Díaz-Díaz, Muñoz and Pérez-González, 2017, p. 200). Besides the concept of BM has already been studied in different fields linked to SC – new technology, social innovation, sustainability, network – and has given positive output (Massa, Tucci and Afuah, 2017), it seems thus, natural to apply it to the field of SC.

### **3. Research Method and Findings**

- Research Method

As first step, we conducted a systematic literature review within two databases – EBSCO and Scopus – and in the platform of peer-reviewed literature, Science Direct. We used the combination of the following keywords 'Business Model\*' and 'Smart Cit\*'. As the focus was specifically on BM and SC, we limited the research to title, abstract and keywords. We identified twenty-five relevant papers by restraining our set to English papers published in academic journals.

In a second step, we analysed the papers and categorized them thanks to different classifications based on the use of BM in the research with a focus on the definition used, if relevant. Additionally, we made the difference on which stakeholder takes part in implementing the new BM in the SC ecosystem. Then, we looked at the meaning of Smart City – ‘human driven method’ and/or ‘technology driven method’ – and if the BM was linked to specific new technology.

- Findings

More than half of the papers (thirteen papers) are quantitative research, seven being case studies in European cities. Furthermore, we can highlight 1) that seventeen papers studied BM that are related to data – big data, open data, etc. – and 2) that most papers (nineteen papers) consider SC more as a ‘technology driven method’ than a ‘human driven method’ even if few consider as well the second method to a lesser extent.

When we focus on BM, we observe that only five papers give a definition of BM, of which three definitions are Osterwalder and Pigneur’s definition linked twice to the practical use of their tool the “Business Model Canvas” (Osterwalder *et al.*, 2010). More than half of the BM (thirteen papers) involves the City governments in the implementation of the BM. Six papers expose BM developed by important private players mostly technology companies.

Finally, we can observe that only four papers feature BM that involve citizen’s participation. Likewise, we can note that three papers out of the four involving citizens, consider SC as a more ‘human driven method’ and are based on new technology linked to data as well. Since current publication does not provide evidence, more research would be needed to reveal possible correlation between the SC approach and the different existing BM. Then, it should measure if the impact of different type of BM on the SC ecosystem is positive and support sustainability.

#### **4. Conclusion and Future Research**

The paper highlights that the concept of BM in the context of SC needs clarification for each stakeholders of the SC ecosystem. Indeed, its use is not always clearly identified and so, not always used as an asset to develop SC on territories/cities. The absence of BM definition in most publication is probably the first indication of a lack of understanding of the concept in the context of SC. However, the low number of paper shows also that the subject is still new, the first publication date 2011, and that we should expect soon more publications.

In the future, we would like to identify exactly the meaning of BM for the different stakeholders active in SC ecosystem but also, the importance of their involvement in the BM implementation. Does it impact the BM efficiency and thus, the territory on which the SC ecosystem is considered? In addition, we would like to understand how and which BM initially developed for SC or not, can help territories/cities to achieve sustainability and how we can foster it. Existing fields of research such as social business model, sustainable business model or business model innovation will surely be great inspiration for further research on the subject. Finally, we would like to take the opportunity to contribute to the development and the clarification of the concept of BM in general.

## 5. Areas for Feedback and Development

How can we improve the methodology (literature review, classification, etc.)? Which other classifications could help to understand the impact of the BM approach on SC and each stakeholder of the SC ecosystem? Which existing theories could help to comprehend better BM in a SC ecosystem/context? Which direction should take research for future paper?

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