

## Paper Session

# [H28] Business models for socio-technical transitions: the case of smart cycling innovations

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In this paper, we explore the relation between business models (BM) and socio-technical transitions by evaluating a large set of cycling innovations. Conceptually, we are interested in exploring the role of BMs as a driver of institutional change. Empirically, cycling and smart cycling innovation have been largely overlooked in transition studies, despite that an emerging coalition of city and regional authorities, entrepreneurs and academics increasingly consider cycling as a crucial part of responding to a range of societal challenges. For now we define cycling innovations as smart when they are part of a wider transformation of the urban and regional cycling system, with a particular emphasis on ICT enabled innovations.

The role of BMs in change processes has received little attention. Research has only recently started to address the link between BMs and transitions. Some scholars argue that the role of BMs in socio-technical transitions is underexplored and suggest it as an important future research agenda.

In their conceptual integration of BMs and transitions, Bidmon & Knab (2014) show that BMs can impact transitions in three roles: as devices to commercialize technological innovation, as a dominant BM logic part of the existing regime and as a non-technological niche innovation competing with this dominant BM logic. Although the BM can be an important factor Bolton & Hannon (2016) show that in the absence of deeper reforms of political, regulatory and market structures, it is likely that BM innovation in and of itself will be insufficient to enact a system change.

In general, the literature on BMs is about the ways organizations create, deliver and capture value. We adopt Teece's (2010) view of a BM as a conceptual model of a business (rather than just a financial model). Following this view a BM 'makes implicit assumptions about the customer, the behavior of revenues and costs, the changing nature of user needs, and likely competitor responses. It outlines the business logic required to earn a profit and, once adopted, defines the way the enterprise goes to market.'

### Approach

The empirical case for this paper is cycling innovations in the Netherlands.[1] The Netherlands is considered to be a typical and established 'cycling' country. However, a number of current developments reflect that a 'cycling transition' is unfolding. Governments have articulated ambitious cycling plans. And in recent years cycling innovations seem to be emerging, addressing challenges such as congestion, safety, accessibility and sustainability. Example are bike-sharing platforms, apps that aim to change user behavior, smart infrastructures and e-bikes.

Our main research question is as follows: *What types of smart cycling innovations and related business models contribute to a 'cycling transition' in the Netherlands, and how can we understand the role of business models in this transition?*

We answer the first part of this question by qualitatively analyzing a large set of emergent smart cycling innovations and related BMs in the Netherlands.[2] These innovations are systematically categorized based on different aspects i.e. status, type and its BM. We use the 9 building blocks of a BM by Osterwalder & Pigneur (2010) to unravel the BMs: customer segments; value propositions; channels; customer relationships; revenue streams; key resources; key activities; key partnerships and cost structure. To understand the role of BMs in the transition, we build on the three roles of a BM in a transition as proposed by Bidmon & Knab (2014).

### Preliminary findings

Our first findings demonstrate a cycling innovations typology. Broadly we can distinguish five types of cycling innovations:

1. Bicycle innovations: integrated technological innovations to enhance bike properties
2. Infrastructure: innovations that facilitate a cyclist and thereby enhance the use of cycling
3. Services: innovations that provide cycling as service
4. Behavior: innovations that aim to stimulate or steer cycling behavior
5. New bicycle use: refers to new applications of the bicycle

In the next step we connected the above cycling innovations' typology to their accompanying BMs (using 9 building blocks).

With regard to our preliminary conclusions we argue that the success of these cycling innovations and BMs requires broader institutional change, which requires resources and capabilities that reach beyond the direct influence of individual entrepreneurs. Hence a more collective transition approach (e.g. living lab) is likely required to render these BMs into successful mobility transition pathways.

We find that the success of innovations and their BMs also depends on its fit or misfit with the urban institutional context (e.g. norms, rules, rationales, logics). Therefore, a more geographically nuanced analysis of urban institutional contexts is necessary.

[1] This work is part of *Smart Cycling Futures*, a trans-disciplinary action-research project which investigates how cycling innovations contribute to

more livable urban regions.

[2] Data on the innovations is collected through a desk-study of newspaper articles and press announcements.

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