Barriers to business model innovation in urban freight

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Background

• Sustainability – key goal for technology development and adaption in urban freight.

• Adoption of technology requires commercial viability.

• Commercial viability is achieved through suitable business models.

• Business model innovation (BMI) thus plays a key role in the development of sustainability in the urban freight sector.
Use of fossil fuels in relation to total amount of energy used 1983 to 2014.
Research problem

• Business model innovation is influenced by contextual factors such as business environment and regulation.

• The actors in the transport supply chain are impacted by BMI and their roles change gradually or radically, in some cases even disappear completely.

• There is a lack of research on factors in the urban freight sector that hold back BMI.

• The aim of this paper is to identify barriers to business model innovation that can be linked to the development and adoption of technological innovations in urban freight.
Case presentation

Reduction of fossil fuel in the transport sector:

- Fuel switching (e.g. replacing fossil fuels with biofuels, hydrogen or electricity)
- Increased fuel efficiency (e.g. technological development of the internal combustion engine)
- Improved logistical planning (e.g. decreasing the amount of trips and the distance which goods are transported with vehicles that use fossil fuels through routing and a shift away from trucks to other modes of transport) (cf. Chapman, 2007).

The innovations that we study belongs to the first and last of these categories.
Case presentation

- **DIGITIZATION**
  Changes in relationship between all stakeholders

- **ELECTRIC VEHICLES**
  Changes in financial conditions for one stakeholder
Case results

• Electric vehicles:
  – Vehicle adopter bears the brunt of the cost.
  – Difficult identifying value accruing to stakeholders.
  – Impossible to transfer costs to other stakeholders.

• Digitization:
  – Dispersed adoption necessary for value creation.
  – Increased need for coordination between stakeholders (standardization, long term agreements on technological standards etc.).
Business model innovation as a collective endeavor

• The location of business model innovation was more dispersed than the technological adoption.

• There was an interdependence between the incumbent actors in the transport supply chain.

• This played a decisive role in slowing down business model innovation.
Analysis

• Business model innovation and technological innovation/adoption was continuous and parallel.

• As technology is continuously developing, the basis on which to form business models is changing.

• At the same time the business models of incumbents function as the norm for how business is conducted.

• This leads to a situation where technological innovation is expected by some actors to conform with pre-existing practices.
Increased complexity

- Adopting suitable technology for a specific goal (specified business model).
- Able to choose both technology and the goal while being aware that these factors interact.
Difficulty of selecting/excluding partners

Transport Supply Chain:
- Shipper
- Freight Forwarder
- Transport Operator
- Receiver

Excluded Partners:
- Suppliers
- National Government
- Local Government
- Investors
- Employees
- Local government
- Visitors/Tourists
- Landowners
- Consumers
- Visitors/Tourists
- Employees
- Investors
- Local government
Unclear responsibilities
Conclusion

• The results highlight the following:

– An interconnectedness between the adoption of technology and business model innovation.

– Complacency may result in more extensive change than what a collective and inclusive innovation process might have caused.

– Better communication between different policy making bodies (local, national etc.) may help innovation processes.

– Collectively setting clear, long-term goals, while being flexible about the methods through which those goals may be reached.