

Title: Towards a framework to understand viable urban consolidation centers by inter-business model relations

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Context and motivation

Today's cities cover only 2% of the earth's surface, yet they consume 75% of all resources and produce 75% of all waste (UNFPA, 2007). The total world population is now in excess of 6 billion; more than half of them already live in urban areas (Heilig, 2012). By 2025, the urban population is expected to represent more than two-thirds of the global population. The quality of life in our cities therefore is increasingly under pressure. Cities all over the world are facing similar developments and are struggling to keep air quality, noise emissions and traffic safety to acceptable levels.

To address these challenges, the need for sustainable and integrated urban planning processes related to mobility is widely recognized (Givoni & Banister, 2013). For many years an answer to these challenges with respect to urban freight transport was the concept of urban consolidation centers. Although the concept has shown positive effects for the city logistics stakeholders and on most sustainability issues (Browne et al., 2005; Quak, 2008), at least in theory, many implementations of UCC projects proved financially unviable (Browne et al., 2005; Marcucci & Daniels, 2008; Olsson, 2014; van Duin et al., 2010; Wolpert & Reuter, 2012). Therefore, gaining understanding of the key-success factors, which would allow exploiting the UCC benefits, would be of great societal value.

Research question

The scientific discourse on the viability of UCC is also not clear. Some researchers share the opinion that an UCC should be able to be viable and to be self-funding (J. Allen et al., 2007; Marcucci & Daniels, 2008). However, other researchers state that the viability of UCCs can only be safeguarded by permanent governmental subsidies (Browne et al., 2005; van Duin et al., 2008; van Duin et al., 2010; Quak & Tavasszy, 2011). Also, Browne et al. (2005) state that UCCs should be limited only to areas where delivery-related problems exist. This leads to the following research question: How to safeguard the viability of UCCs?

In this research a viable UCC is defined as an UCC that has a non-negative business case, i.e. a positive combination of financial, sustainable and social effects, and is able to sustain over time. The goal of this research is to understand how to organize UCC viability as a concept providing social and logistical value propositions of multi-beneficial relations between the involved stakeholders (Allee, 2008). A research framework will be designed to analyze and evaluate financial viable UCCs.

Methodology

Before starting to collect empirical data an analytical framework should be formulated in order to carry out an uniform assessment of different UCCs. Except one article (Patier & Browne, 2010) such a framework that yields the required explanatory insights could not be found in literature. Patier and Browne (2010) did design a methodology to evaluate urban transport innovations. Though this methodology has great evaluative power, it is less suited for explorative purposes due to the limited focus on relations. The framework should be able to reveal how the UCC transport service is linked to that of the involved stakeholders. The framework should make clear how the UCC service could impact the individual business models by considering the individual concerns of the potential involved stakeholder, namely the: receiver, shipper, carrier, local & supra local authorities. How the UCC service could impact the individual business models is described in value proposition components, based on the requirements. Next to that, in order to identify the value-proposition relation it should be clear who the customer is (willing to pay). The following steps are required to design the framework related to the value proposition-customer relation:

- (1) Determine the UCC services and performance indicators that indicate an offering of the value proposition component;
- (2) Determine the type of revenue stream or societal or environmental benefit that could occur in exchange for the service;
- (3) Determine how the UCC service could impact the individual business models by assigning value proposition components.

The service value propositions and logistical value propositions can differ per stakeholder and are derived by confronting the UCC performance on public and urban freight sector requirements (based on the work of Olsson (2014); Vasiliauskas & Jakubauskas (2014); Parusaruman et al. (1985) and Quak (2008)).

Next step is the gathering of empirical evidence for the validation of the framework. In practice not many viable UCCs cases can be found. Still the Yin-approach of multiple-case studies is applied to follow replication logic (Yin, 2012). Within the context of this research two viable UCCs have been identified, namely Bristol/Bath and Regents street/London. The four-step research protocol was applied to improve data reliability (Yin, 2012) and to study both cases in depth.

Results and conclusion

Based on different theories three conceptual frameworks are developed to explain the multi-beneficial functional relations among the involved actors:

- Conceptual framework I explains the creation of added value by, based on the value network theory, evaluating the functional relations between the business models of the involved stakeholders;
- Conceptual model II explains the UCC service's social and logistical value proposition by confronting the UCC performance on social and logistical requirements.
- Conceptual framework III evaluates the system context relevant for the creation of added value in a network, by addressing the attitudinal context, the frame of reference and UCC performance.

With the development of these frameworks we want to reveal some of the uniqueness for each specific situation (Quak & Tavasszy, 2011) in order to address the UCC-environment more effectively when the dynamics regarding value creation and the needs of the involved stakeholders are better understood. The validation frameworks are now tested and the validation results based on the case results are available later this year.

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