Information sharing in sustainable value chain network: innovative technology for transportation in cities

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Purpose

A lack of information and understanding of transportation has a major role in most cities. Improving such information is important for information sharing in sustainable value chain network (SVCN) of transportation in these cities. The phenomenon of information sharing is one of the key subjects to be enabled by effective Information and Communications Technology (ICT) technologies such as Internet-of-Things (IoT) (Lindholm, 2010; Mirzabeiki, 2013; Andersson and Mattsson, 2015). Optimising the transportation activities with innovative ICT is considering smart solutions to support freight flow in urban cities due to the complexity of the processes taking place in transport systems and often conflicting expectations of stakeholders (Tachizawa et al., 2015).

In fact, there are a great number of initiatives which are very close as for their objectives but they do not have a common basis like standards, conceptions and strategies (Vovk, 2016). Since 2000, more than 40 different projects on smart transportation have been initiated in Europe (Festag, 2014; Vovk, 2016). Nowadays, smart transportation of IoT includes not only a great variety of information but thousands of other systems using data to make intelligent transport-related decisions (Uden and He, 2017). IoT technologies guarantee economic benefits as chain actors will be able to share valuable information and make more reasonable decisions to reduce transportation time and transportation expenditures and to also reduce the impact of transportation on the society and environment (Haddud et al., 2017).

With visions from a multi-disciplinary perspective, the IoT has become the common paradigm of modern ICT area by enabling innovative applications in nearly all sectors of economy (Haddud et al., 2017). However, relatively little attention has been paid to the information sharing between actors enabled by IoT for smart transportation along the SVCN (Andersson and Mattsson, 2015; Uden and He, 2017). Thus, this research aims to explore the high-order themes to information sharing in SVCN with a focus on the applications of IoT as a key enabling ICT innovative technology from the perception of expert community.

Methodology

This research is an inductive qualitative study and adopts a case study strategy. From a multi-disciplinary perspective, a conceptual framework can be developed from both existing literature and contextual field data (Eisenhardt, 1989). The cases are projects in the context of transportation in the UK. Semi-structured interviews are conducted with experts in these

projects. This research applies within case and cross-case analyses (Miles and Huberman, 1994). By defining the themes of the associations between IoT applications and information sharing in SVCN it became possible to develop the framework. These projects are selected because they have smart ICT technologies (e.g. IoT) for transportation, and have focus on information sharing in their SVCN. Experts as key informants are chosen because they provide an overview of the IoT application, information sharing and their projects as a whole. The aim is to gain rich understanding of what are the applications of IoT in smart transportation, how far IoT enable information sharing between actors, and what the roles of information sharing in SVCN. UK is one of the key countries which has initiatives in applying IoT to support sustainable development in sectors especially transportation in cities.

Findings

The research develops a holistic conceptual framework structured by key themes of association between IoT applications and information sharing in SVCN (Tachizawa et al., 2015; Haddud et al., 2017). Basically, the research identifies various applications of IoT, which provide various transportation information types that is shared between actors for improving smart transportation operations. Further, how improvement could take place by creating better sustainability for SVCN in a smart city context. This research distils evidence into a set of recommendations for policy makers and projects' management.

Relevance/Contribution

This research responds to calls for a holistic perspective on understanding of how information sharing contributes towards improving SVCN through focusing on innovative technology (Taniguchi et al., 2012; Uden and He, 2017). A holistic perspective is a need for increased transparency and shared information for all actors as a key objective in SVCN for improving smart transportation operations by IoT.

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