

Summary:

Adoption of transport related innovations in the craft industry: Key theoretical approaches

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Author(s): Tom E. Julsrud, Jon Martin Denstadli
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Innovations are increasingly seen as important to initiate and strengthen transitions towards more sustainable transport in small -and medium sized enterprises (SME). Small enterprises in the craft industry have so far lagged behind larger enterprises when it comes to implementation of innovations that can improve sustainability and efficiency of craftsmen transportation. Rapid development of mobile communication technologies and software, and access to a wider range of electric utility cars, provide opportunities for developing more sustainable and efficient craft enterprises.

The craft industry involves a large number of employees in Norway, which undertake a significant number of trips in urban and sub-urban areas. Figures from Statistics Norway show that the number of vans and small lorries driven by craftsmen is growing, contributing to increased congestions and emissions. Policy measures to improve the sustainability of urban transport also need to consider mobile workers like field service workers and craftsmen.

During the past few years new technologies have been introduced that can increase the efficiency and sustainability of craftsmen transportation. Firstly, developments involve ICT-based tools to improve the coordination of assignments, order management systems, and route optimization to limit time spent on the road. These technologies have so far not been pursued in any significant number in the craft industry. Secondly, sales of electric vehicles have increased rapidly in recent years, although so far primarily in the private market. However, increasing number of businesses start to implement electric vehicles in their car fleet, but for the most part for person transport.

In the CRAFTTRANS project the potential impact of these two innovations is investigated, based on triangulation of quantitative and qualitative data sources.

An investigation of the adoption of these innovations in the craft industry needs to rely on a given conceptual and theoretical foundation. For the purpose of the forthcoming work, this report seeks to clarify key concepts, and six theoretical approaches drawn from the literature describing adoption of innovation in organizations are reviewed. This includes traditional diffusion theories, psychological adoption theories, social constructivist theories, organizational contingency theories, institutional and network theories, and transition management theories (see Table I). Within each of these broad theoretical approaches, some selected theories are exposed.

Table I: Overview of theoretical approaches and theories examined in the report.

Approach	Theories	Contributors*
Diffusion of innovation	Traditional DOI	Rogers et al, 1971, 1995
	Organizational DOI	Frambach et al, 2002
Psychological	Theory of reasoned action	Fishbein & Ajzen, 1980
	Technology acceptance model	Davis, 1989
	Unified theory of acceptance	Venkatesh et al, 2003
Social constructivist	Community of practice	Lave & Wenger, 1991
	Cultural framing of technology	Orlikowski & Gash, 1994
	Domestication theory	Silverstone et al, 1992
Contingency	Dual-core theory	Daft, 1982
	Ambidextrous theory	Duncan, 1976
	Environmental change	Damanpour et al, 1989
Institutional & Network	Regional Innovation systems	Asheim et al, 2007
	Social network theories	Lin, 2001
Transition management	The multilevel perspective	Geels, 2002

* Examples

A brief review of current research on *Electric Utility Vehicles* (EUVs) indicate that several of the approaches are exploited in the transport literature. There are, however, few (if any) research conducted on adoption of *Mobile Media Applications* (MMAs) among small craft enterprises.

The various theories comes from different scientific disciplines, they focus on different elements and aspects within the adoption process, and they also tend to rely on different methodological strategies. Yet, the theories are not isolated, and more recent approaches usually “borrow” heavily from the earlier approaches.

For the purpose of this project, a combination of theoretical approaches are recommended. For the forthcoming survey exploring interest for adopting EUVs among managers in the craft industry, organizational diffusion theory and psychological adoption theory is a useful point of departure. For the case studies investigating the uptake of EUVs and MMAs a social constructivist approach, such as cultural framing or domestication theory, will be more relevant.