

Summary:

Research needs for freight transport and business travel

Introduction

This report summarises the findings of a feasibility study carried out by the Institute of Transport Economics (TØI) and financed by the programme Intelligent Freight Transport (SMARTRANS) of the Research Council of Norway. The findings are a contribution to the further development of the programme.

The objective of the project is to identify research gaps in four areas:

1. Transport costs and intermodal solutions
2. Valuation of time and reliability for freight transport and business trips
3. Corporate transport and communication
4. How ICT and ITS can contribute to cover data needs in freight transport research

A memo has been written in Norwegian for each of the areas. The present report mainly lists the identified research gaps, while the state-of-the-art and the background for the identified gaps are to be found in the four memos.

Interactions between transport and other processes

In order to understand the drivers behind the transport demand and transport costs of firms, as well as the effects on firms of an improved transport system, it is essential to study processes outside the transport market. This applies to transport of both goods and people. Several of the research gaps identified in this project are related to the interactions between transport and other activities.

On the one hand, national and global trends have significant influence on firms' choice of location and scale of production and inventories, which in turn affects transportation needs. Examples of such trends include new international trade patterns, vertical integration and moving labour-intensive production to countries with lower production costs. Ownership structures and other organisational issues may influence the choice of transport alternative.

On the other hand, changes in the transport market might affect more than transport decisions. Transport time savings can have effects beyond savings in transport costs, if decisions related to inventory and production are affected.

Faster and more reliable transports contribute to facilitation of just-in-time deliveries.

Not only for freight, but also for business trips, there are important explanatory variables outside the transport market. Different types of industries and firms have different communication needs. Further, the firm's distance-dependent costs will depend in part on the available transport alternatives.

It will be too simplistic to assume that spatial distance implies less competitive firms. This implies that detailed knowledge about the drivers of transport demand and costs is important if the authorities are to fulfil transport policy objectives. Knowledge about the relative importance of different characteristics of the transport system for businesses is important also in order to be able to derive reliable unit costs for economic analyses, e.g., values of time for freight transport in cost benefit analysis. The analyses are in turn part of the basis for prioritisation of measures.

Identification of knowledge gaps: Results

Transport costs and intermodal solutions

The research gaps found here stem from challenges facing Norwegian companies. Compared to other countries, the level of transport costs is high, particularly in the outer regions. Further, firms must adjust to the trends that were mentioned above.

Stimulating intermodal transports is a means to achieve transport policy objectives of a better balance between transport modes. There are research needs regarding how to achieve attractive intermodal solutions.

Research gaps in the following areas are discussed:

- Logistics costs and competitiveness
- Terminal structure and inventory structure in efficient transport and logistics networks
- Transport chains, security and costs
- Sustainable transport solutions
- Transport effects of recycling

Valuation of time and reliability in cost benefit analysis

This section covers:

- Value of time and other logistics costs in freight transport
- Value of time for business trips
- Value of reliability and application in cost benefit analysis

Valuation methodology for freight transport should incorporate a framework in which transport is viewed as one of several activities in a chain; other elements being e.g. production and inventory.

Methodological challenges, as well as new possibilities of travel time being used productively, suggest that valuation of time for business trips is a field that should be investigated further.

Transport time variability is not a standard component of cost benefit analyses, despite the fact that the reliability of transport is often claimed to be of importance for businesses.

Corporate transport and communication

Developing efficient measures requires insight into the diverse needs and challenges of firms. A nuanced study of issues related to business trips requires a combination of several perspectives. In this project, research gaps have been discussed from the following perspectives:

- Infrastructure and transport supply
- Spatial matters – localisation and competitiveness
- Characteristics of individual industries and firms
- The benefit or function of a business trip
- Interface with ICT – to what degree ICT affects the need for business trips

Data needs in freight transport research

The limited availability of data has been a constraint in freight transport research. Finally, this is now improving, although there are still uncovered areas. Intelligent transportation systems (ITS) and information and communications technology (ICT) can contribute in covering data needs. However, the applications of these systems in transport are not usually designed with the data needs of transport research in mind. Hence, it is important that the needs are communicated at an early stage of development. One of the challenges is that systems are often on private hands, while the data needs are in the public sector. Another challenge is privacy considerations.

Synergies

There are possible synergies in covering knowledge gaps in these four areas. If data needs in freight transport research were covered, it would make a difference in studies of several topics as well as in the development of valuation methodology. In turn, valuations of for example transport time variability could contribute in analyses of the competitiveness of intermodal versus direct (uni-modal) freight transports.

Increased empirical knowledge about business trips would have provided a better basis for assessing what type of theoretical model is most suitable for values-of-time-savings on business trips, and also for the design of value-of-time studies.

Conclusion

This feasibility study has identified a number of research gaps related to corporate transport demand. There is a need for empirical studies of freight transport and business trips. Further, there is a need for nuanced studies of the relationships between transport demand and the various corporate processes intertwined with it.