TRANSCOM 2025: 16th International Scientific Conference on Sustainable, Modern and Safe Transport

Establishing New Connections in Combined Road-Rail Transport
– BPMN Model Derived from an Interview Study

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INTRODUCTION

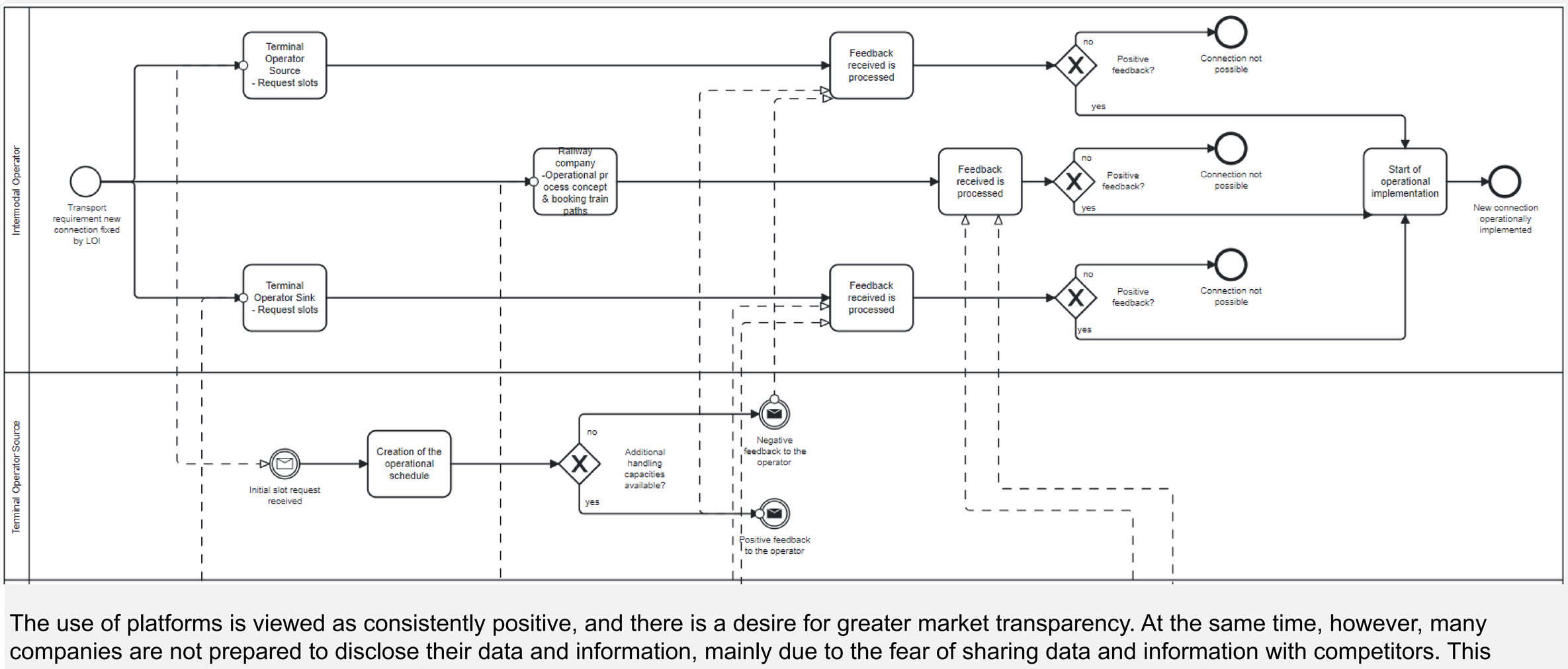
This study explores the establishment of new connections in combined road-rail transport, focusing on the operational and decision making processes involved. Through an interview-based qualitative study with key stakeholders, the research identifies critical factors influencing connection establishment, including infrastructure availability, collaboration among stakeholders through digital platforms, and logistical planning. Insights from the interviews inform the development of a Business Process Model and Notation (BPMN), which captures the workflow and decision points in the process. The BPMN model provides a structured framework for analyzing and optimizing the integration of road and rail transport systems, aiming to enhance efficiency and foster sustainable multimodal logistics solutions.

METHOD

Semi-standardized expert interviews are used as a methodology for the present research subject of deriving the practice-oriented status quo for developing new connections in combined road/rail freight transport. Partially standardized expert interviews are characterized by the fact that the interviewees' statements can be dealt with flexibly. Nevertheless, the guideline allows a basic structure of the interview. In addition, new knowledge is generated through open questions, and this knowledge is specified through closed questions. This results in a fundamental development of the research subject from a practical perspective. Eight interviews were conducted with stakeholders from the combined freight transport sector.

RESULTS

The catchment area of potentially relevant loads or transport volumes for CT terminals is also very heterogeneous. The feedback from the experts ranges from 40 km to, in individual cases, 150 km distance to the terminal, always in the context of the surrounding area, company density with potential loads, and the possible competition from other CT terminals. Furthermore, a total transport distance of at least 300 km must be considered in relation to the potentially relevant transport. The experts agree that there are certain hurdles to establishing new connections regarding the transport volumes to be delivered by one or more potential customers of combined road/rail freight transport to consider setting up a new connection. The main criterion here is the capacity utilization of rail transport. Only when a capacity utilization of at least 70% to 85% is guaranteed by a primary customer or the combination of several customers and such a volume has been contractually agreed upon does the process of setting up the new connection and involving the various players in combined road/rail freight transport begin.



The use of platforms is viewed as consistently positive, and there is a desire for greater market transparency. At the same time, however, many companies are not prepared to disclose their data and information, mainly due to the fear of sharing data and information with competitors. This hinders the further spread of digital platforms in the rail freight transport sector, such as Transporeon has achieved for road freight transport. A digital platform that attempts to creatively link new transport volumes from different companies and establish new connections does not exist.

CONCLUSION

This study provides insights into establishing new connections in combined road-rail transport by developing a BPMN framework. The BPMN model offers a structured representation of the workflow and decision-making processes of integrating road and rail transport systems. By analyzing the perspectives of key stakeholders, the study identifies critical factors such as infrastructure availability, digital platform collaboration, and logistical planning, all of which influence the successful implementation of intermodal transport solutions. Furthermore, essential parameters are identified, such as the maximum catchment area of min. 150 km, the total transport distance is min. 300km and, above all, the utilization of the transports of min. 70 % of the total capacity.

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