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Potential of the modular mobile terminal concept to improve barge logistics in seaports: a cost and time analysis

The logistics chain process of containerised cargos consists of the selection of a mode for the transport activity of the containers. The mode selection involves several factors such as the effectiveness and efficiency of the mode, transport time, service frequency, flexibility, cost, and reliability of the transport mode. Based on this, the current research examines how to improve the efficiency of container inland waterway transport to make it more competitive. This study is part of a more comprehensive EU Horizon 2020 project called NOVIMOVE (Novel inland waterways transport concepts for moving freight effectively). It examines how to eliminate the inefficiencies in inland waterborne transport by reducing sailing and waiting times at ports without expensive modifications of port infrastructures. To achieve this, a new concept known as the modular mobile terminal is examined, and its potential impact on the operational efficiency of container barges in seaports is evaluated. This research aims to evaluate the feasibility of the modular mobile terminal concept, through cost and time analyses. The results show that time savings of around 10 hours per barge can be achieved if inland vessels from hinterland regions with a substantial number of services and relatively low cargo volumes call only at the modular terminal instead of visiting deep-sea terminals. These time savings translate into significant cost reductions (in the range of 20% to 50%) for barge operators.

