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A Collaborative Truck Appointment System in Container Terminals

Ahmed Karam^a, Amr B Eltawil^b, Ahmed E Azab^c, Kristian Hegner Reinau^a

^aDivision of Transportation Engineering, Department of Civil Engineering, Aalborg University, Denmark

^bDepartment of Industrial Engineering and Systems Management, Egypt-Japan University of Science and Technology, Egypt

^cDepartment of information and physical sciences, Graduate School of Information Science and Technology, Osaka University, Japan

Abstract

Due to the continual increase of the global containerized trade, many container terminals face the problem of high demands that their current resource capacity cannot afford. The consequences of such situation aren't only the long queues of trucks at the entrance gates and storage yards but also the high long turnaround times of trucks and the high level of CO₂ emissions. In response, Truck Appointment Systems (TASs) were introduced to schedule truck arrivals in order to alleviate the terminal rush hours, however, the operations as well as resources of the trucking companies are negatively affected by the mandatory appointments developed by TASs. In recent literature, this issue was considered by introducing collaborative TAS in which the trucking companies as well as the container terminals collaborate to make the decisions on the truck appointments. However, existing collaborative TAS showed that if one or more trucking companies do not commit to the collaboratively scheduled appointments, this would increase the turnaround times of other trucking companies, committed to their collaborative appointment schedules. This work discusses some strategies to deal with the deviated truck arrivals such that other trucking companies are less affected by the execution disruptions.
