Contract based ocean voyage performance monitoring and condition change simulation

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It is undisputed that cost, energy and emission savings are achievable by improved vessel and fleet operation, but the potential cost and energy savings cannot be quantified easily due to the various uncertainties that might be encountered during the operation. The applied quantification of cost and energy savings potential for individual voyages is made by assuming the commercial position of ship-owners. This perspective is chosen due to the common thought that commercial considerations prevail over environmental considerations. The model shall use real contract details and realistic operation data from a variety of sources to be mentioned in the research. An analytical simulation model needs to be developed which takes also into account expert views and relevant literature. The model may not be limited to strict valuation of existing contracts or vessels performances but to simulate operation related condition changes concerning some parameters such as port working times and weather effects. The employment of variable conditions allows to allocate, remove, and add or to shift efficiency boundaries and to quantify their effects on commercial performance. The concept, therefore, shall provide a flexible tool to simulate different scenarios to explore the potential of cost and emission saving. The results of the research will help us to understand cost, energy and emission savings for charterers and ship-owners. The outcome of this research will also give a very detailed understanding of the relation between all cost mechanisms for applied case studies of dry bulk cargo operation. This will contribute to understanding most important challenging activities which affect profit and energy consumption for both sides of charterers and ship-owners. Additionally, a possibility of applications on new case studies for the different type of cargo like container and tanker are discussed and explained in this research. Therefore this research addressed a holistic understanding of contract based ocean voyage performance monitoring.

Keywords: voyage optimisation, cost savings, shipping, ship-port simulation, contract performance

Accepted manuscript of the following research output: Senss, A., CANBULAT, O., Demirel, Y. K., & Turan, O. (2018). *Contract based ocean voyage performance monitoring and condition change simulation*. Abstract from 11th Europe-Korea Conference on Science and Technology (EKC2018), Glasgow, United Kingdom.