Seaborne trade is the lynchpin in almost every international supply chain, and about 90% of non-bulk cargo worldwide is transported by container. In this survey we give an overview of data-driven optimization problems in liner shipping.

Research in liner shipping is motivated by a need for handling still more complex decision problems, based on big data sets and going across several organizational entities. Moreover, liner shipping optimization problems are pushing the limits of optimization methods, creating a new breeding ground for advanced modelling and solution methods. Starting from liner shipping network design, we consider the problem of container routing and speed optimization. Next, we consider empty container repositioning and stowage planning as well as disruption management. In addition, the problem of bunker purchasing is considered in depth. In each section we give a clear problem description, bring an overview of the existing literature, and go in depth with a specific model that somehow is essential for the problem. We conclude the survey by giving an introduction to the public benchmark instances LINER-LIB. Finally, we discuss future challenges and give directions for further research.