

Chapter 18

Data Analysis in the Shipping Industry: eShip Case Study – Problem Statement

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ABSTRACT

This chapter identifies the critical issues that must be addressed to accelerate the digital transition in the chartering market. The maritime industry is one of the pillars of global trade, where change is a constant. Again, shipping is at the cusp of a new era—one driven by data. The authors review the state-of-the-art technology that is useful to automate chartering processes. · The Fourth Industrial Revolution (or Industry 4.0) starts to change the bulk shipping markets leveraging the data flow between industrial processes in the physical and virtual world. · The internet of things accelerates data flow from things in the real world to the virtual world and enables us to control processes in real-time. Machine-to-machine communication, together with artificial intelligence, creates autonomous systems in many areas of production and logistics. Based on the gathered elements, eShip's case study was analyzed, and future steps have been defined for the data analysis in the shipping industry.

DOI: 10.4018/978-1-7998-6985-6.ch018

INTRODUCTION

Traditionally, the shipping industry has been highly dependent on its various mini-ecosystems, consisting of ports, authorities, ships, ship operators, shipowners, cargo owners, and many more. However, over a decade ago, researchers noted that the traditionally conservative shipping industry is undergoing a change, where it is believed that the demands for an increase in efficiency, safety, and protection of the environment can be only achieved by more innovation (Jacks & Pendakur, 2010; Perunovic & Vidic, 2011; SmartPort, 2019). Half a century ago, the French geographer Perpillon considered ports and maritime transport to form a constellation (Ducruet & Zaidi, 2012). All the different players in the ecosystem are inextricably linked, making interconnectivity and cooperation between them crucial for effective and efficient operations of the transport system (Martimo, 2017). The port of the future is a smart port, and the ship of the future is a smart ship. However, before getting smart, all the “constellations” must go digital (Delenclos, Rasmussen, & Riedl, 2018). Change is a constant in the maritime industry, and it is once again at the cusp of a new era—one driven by increased digitalization and innovation (Levinson, 2020; SmartPort, 2019). Smart ships and smart ports will exchange data for speeding up the processes at the port, including refueling, unloading, and loading cargo. Paperwork can be handled automatically. Ports will exchange data, announcing what leaves one port to the ports that receive the cargo. Such exchange speeds up customs clearance.

The fourth industrial revolution promises increased automation of all processes. This includes the shipping industry. Parcel services like DHL track their shipments around the world in real-time (Diwan, 2016). This development necessitates that all stations the cargo takes are digitized. For the shipping industry, this includes the ships and the ports. The Boston Consulting Group identified several emerging technologies like advanced analytics, autonomous shipping, robotics, and artificial intelligence set to change how planning, operations, commercial, and support functions within shipping are performed (Delenclos et al., 2018). With the addition of digital data about cargo and ships, data analytics and machine learning uncover better ways to handle ships, ports, and cargo. It enables to measure the impact of every step, decrease cost, and speed up processes.

Information technology on-board and in communication from vessels to ports and authorities are developing as required. However, according to a survey conducted by eShip in 2021, the dialogue between cargo owners (charterers) and shipping operators is, in most cases, still using phones and various forms of paper, spreadsheets, and other unstructured data formats for keeping and sharing information (PDF documents in e-mails being one example). Consequently, there is significant room for improvement, particularly when organizing operations and making the interaction between stakeholders more efficient. The authors review the state-of-the-art technology useful to automate chartering processes that serve as a base for the eShip project development. The eShip project, funded by an EEA Grant, is developing an online platform for making the entire chartering process digital. This includes contracts of affreightment, charter party terms, real-time voyage tracking, demurrage/dispatch calculations, freight invoice generation, bills of lading, post-voyage analysis, and regulatory compliance. Based on the gathered insights, the critical issues that must be addressed to accelerate the digital transition in the chartering market were identified. Future steps have been defined for the data analysis in the shipping industry.

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