



Opinion paper

Shipping Information Modeling (SIM): bridging the gap between academia and industry

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Abstract: On one hand, the academia has conducted a considerable amount of research on shipping operations but there are not many matches between academia and industry: little academic research is applied to the industry; on the other hand, shipping companies are in urgent need of decision support tools that can generate informed decisions to lower cost, improve profitability, and reduce environmental footprint. We propose that Shipping Information Modeling (SIM) systems will be able to bridge the gap between academia and industry.

Keywords: maritime transportation; Shipping Information Modeling (SIM); shipping

Shipping is an ancient industry with a history of 5000 years. The commercial decisions faced by shipping companies are generally made by experienced seafarers such as captains who later become managers working in land, based on their decades of experience in the industry. Nowadays, shipping companies are dealing with much more complex shipping operations because of globalization. Moreover, the size and scope of a shipping company is unprecedented due to acquisition and merger. As a result, traditional experience-based approaches can hardly produce high-quality management decisions any more. In recent years, shipping companies face dual pressure of market downturn and more stringent environmental regulations on shipping. Shipping companies are in urgent need of decision support tools that can generate informed decisions to lower cost, improve profitability, and reduce environmental footprint.

The academia has conducted a considerable amount of research on shipping operations since 2000, as shown in the review papers by Christiansen et al. (2013) [1], Meng et al. (2014) [2], and Yan et al.

(2021) [3]. However, there are not many matches between academia and industry and little academic research is applied to the industry. There are two reasons for this unfortunate result. First, researchers in academia do not have data and the data used in academic papers are mostly assumed ones. Second, the results in academic research are generally demonstrated using very basic figures (e.g., bar charts, histogram, line charts) and tables. The unintuitive results based on assumed data can hardly be appreciated by the industry and hence the industry is reluctant to forge further collaboration with academia to apply the academic research.

Nowadays, a wide range of shipping-related data, notably the automatic identification system (AIS) data [4], which records real-time locations of ships mandated by the International Maritime Organization, is available for use. For instance, a large variety of real data can be extracted or derived from AIS data, such as port distance, time spent at port, shipping routes, ship trajectory, ship schedule, and cargo load of ships. Enlightened by the concept of Building Information Modeling (BIM) in construction management [5], we propose the concept of Shipping Information Modeling (SIM) system, which is one that is capable of (i) extracting real data (e.g., AIS data) for academic research, and (ii) visualizing model outputs from academic research by interactive maps and animation for practitioners. Currently, a few commercial companies provide shipping related data and data analytics decision support, however, their impact is limited because a single company has limited ability in obtaining data and conducting decision analysis. We envision that open-source SIM systems will be vital for academics to conduct practical research, for government to evaluate the pros and cons of different policy interventions, for industry to adopt the latest science to improve the businesses, and for the public to appreciate the social, economical, and environmental impact of the maritime industry. Hopefully, such open-source SIM systems can be set up by a consortium of government, academia, and industry as soon as possible.

Conflict of interest

The authors declare there is no conflict of interest.

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