

At the Chair of Logistics and Supply Chain Management of TUM School of Management, we are looking for an interested and qualified student to conduct his/her

Master thesis

on the topic

Machine learning for financial hedging in maritime business via long-term contracts

In the shipping market, charterers that need regular cargo transportation seek opportunities to secure their costs against unexpected changes in the volatile freight market. Contracts of Affreightment (COA) are legal agreements between shipowners and charterers to govern the transportation of specified quantities over specific periods with fixed freight rates. The rates agreed on these contracts stay fixed as long as a predetermined index indicating the ship owners' operating costs, such as bunker costs, exceed some predefined thresholds. This research aims to identify the actual contract terms prevalent in the industry and proposes a data-driven and machine learning approach to minimize the charterer's costs based on the freight market data and economic indicators.

Key project tasks:

- Literature review on relevant fields of study
- Identification of the elements of a problem that can be modeled mathematically.
- Implementation and testing of machine learning and data driven models.
- Systematic comparison of selected model performances
- Analysis of results and implications

Requirements:

The thesis is suitable for Master in Management and Technology students with a major in operations and supply chain management. The ability to work independently as well as analytical skills are required. Knowledge of one general-purpose programming language (e.g., Python, R) is required. Knowledge of stochastic optimization and machine learning is preferred. The thesis should be written in English.

Earliest begin: August 2023

Supervisor: Burakhan Sel

Application: Email with curriculum vitae and transcript of records to logtheses.log@mgt.tum.de