

A Mathematical Model to Select Shipbrokers

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Abstract : Shipbrokers assist the ship companies in chartering or selling and buying vessels, acting as intermediates between them and the market. They facilitate deals, providing their expertise, negotiating skills, and knowledge about ship market bargains. Their role is very important as it affects the profitability and market position of a shipping company. Due to their significant contribution, the shipping companies have to employ systematic procedures to evaluate the shipbrokers' services in order to select the best and, consequently, to achieve the best deals. Towards this, in this paper, we consider shipbrokers as financial service providers, and we formulate the problem of evaluating and selecting shipbrokers' services as a multi-criteria decision making (MCDM) procedure. The proposed methodology comprises a first normalization step to adjust different scales and orientations of the criteria and a second step that includes the mathematical model to evaluate the performance of the shipbrokers' services involved in the assessment. The criteria along which the shipbrokers are assessed may refer to their size and reputation, the potential efficiency of the services, the terms and conditions imposed, the expenses (e.g., commission - brokerage), the expected time to accomplish a chartering or selling/buying task, etc. and according to our modelling approach these criteria may be assigned different importance. The mathematical programming model performs a comparative assessment and estimates for the shipbrokers involved in the evaluation, a relative score that ranks the shipbrokers in terms of their potential performance. To illustrate the proposed methodology, we present a case study in which a shipping company evaluates and selects the most suitable among a number of sale and purchase (S&P) brokers. Acknowledgment: This study is supported by the OptiShip project, implemented within the framework of the National Recovery Plan and Resilience "Greece 2.0" and funded by the European Union - NextGenerationEU programme.

Keywords : shipbrokers, multi-criteria decision making, mathematical programming, service-provider selection

Conference Title : ICORMA 2023 : International Conference on Operations Research, Management and Applications

Conference Location : Nicosia, Cyprus

Conference Dates : November 06-07, 2023