

Abstract

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Green Port Performance Index for Sustainable Ports in Egypt: a Fuzzy AHP approach

As today's competitiveness is highly rising in the global maritime sector paralleled with an increased concern on the sustainability of operations and the environment, the purpose of this research is to propose a performance measurement system to evaluate and improve ports' green performance. The proposed system would support ports' authorities in assessing their green performance, defining the areas that would need improvement and ultimately allocating the necessary fund to develop and improve its green performance. The literature is reviewed and a survey is conducted to identify the key green port performance indicators. This survey targeted subject matter experts (SMEs) and academics in the maritime sector in Egypt, the United Kingdom and Singapore. A fuzzy analytic hierarchy process (FAHP) questionnaire is then carried to determine the relative importance weight (W) of the key Selected indicators among the major container ports in Egypt namely Alexandria, East Port Said and Sokhna. The indicators would then be quantified and a performance rate (R) would be assigned for each indicator based on a performance rating scale. Finally, a green port performance index would be designed using a weighted averaging aggregation method in order to aggregate the indicators' weighted rates (WR) into a single index of overall performance from which a port can compare its performance with other competitive ports.