Simulation of passenger flows at a constrained cruise port: Evidence from the island of Santorini

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Abstract

This paper implements a discrete event simulation model that depictures the landside passenger flow of a popular cruise terminal located in Santorini, Greece. The developed conceptual framework can be applied as a generic approach to other similar cruise ports. In brief, we propose a micro simulation model which represents in detail among many other elements, passenger flows towards a nearby touristic settlement by considering three transport alternatives i.e. cable car, stair path and donkey guides. We identify that the bottleneck of the examined system is the cable car which is the main tourist preference capturing more than 90% of the total traffic. This situation has also been reported by the local authorities and the port administration. Our work goes beyond the validation of the problematic situation by conducting a revenue loss analysis while also examining different capacity and service rate scenarios examining the spilled demand as a function of the average queue length. Finally, we conclude by evaluating potential enhancements to the examined system that could increase its profitability.

Keywords: Simulation**;** Maritime applications**;** Queuing Systems

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