1. A decision support system to improve performances of airport check-in services

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Abstract: The recent remarkable increase in air passenger traffic has been fostering a considerable congestion of the airport facilities. In this context, traditional procedures employed for check-in operations have been supported by alternative methods, based on the use of self-service options (kiosks, web services, app for mobile phones, etc). However, even if such innovations are contributing to improve the service level provided to passengers, field investigations suggest that traditional procedures will be employed also in the future, especially for medium and long-haul flights, where baggage dropping is required. For this reason, the passengers allocation problem at check-in counters is attracting growing attention by the scientific community and several decision support tools, involving both optimization and simulation methods, have been proposed. Most of the available approaches aim at deciding the optimal number of check-in counters to be activated, in such a way to balance the operative costs and passengers waiting times. Such approaches assume that the service capacity (in terms of available check-in operators and counters) is given and determined on the basis of physical constraints (related to the available space in the terminal) and of staff scheduling decisions made at a tactical level. The present contribution tries to overcome this limitation, by proposing a decision support system, based on a mathematical model, capable of designing optimal check-in policies by also incorporating staff scheduling decisions. The model is tested on some real-world case studies; computational results are evaluated, along with the practical usability of the approach. © 2018, Springer-Verlag GmbH Germany, part of Springer Nature. (25 refs)
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