

Article Title

Using machine learning and big data for efficient forecasting of hotel booking cancellations

Citation

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Abstract

Cancellations are a key aspect of hotel revenue management because of their impact on room reservation systems. In fact, very little is known about the reasons that lead customers to cancel, or how it can be avoided. The aim of this paper is to propose a means of enabling the forecasting of hotel booking cancellations using only 13 independent variables, a reduced number in comparison with related research in the area, which in addition coincide with those that are most often requested by customers when they place a reservation. For this matter, machine-learning techniques, among other artificial neural networks optimised with genetic algorithms were applied achieving a cancellation rate of up to 98%. The proposed methodology allows us not only to know about cancellation rates, but also to identify which customer is likely to cancel. This approach would mean organisations could strengthen their action protocols regarding tourist arrivals.

Conclusion

Through this research, it was possible to add the academic literature about the hotel and lodging industry regarding forecasting hotel booking cancellations using artificial intelligence. Theoretically, it has contributed as well in terms of using PNR data for forecasting hotel cancellations with a high level of accuracy. Also, it is also significant that the research only used a reduced number of independent 13 variables compare to previous research which used at least 37. These variables are common data for hotels to acquire, and it makes it possible for hotels to accumulate to train the model enough to anticipate the booking cancellation.

From a managerial perspective, it is implied that customer's historical records are critical assets for the hospitality industry to forecast the cancellation and cope with to avoid revenue loss. Since the research results that we can identify which customer is likely to cancel, hoteliers can take proactive actions to prevent cancel from them.

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