



### Article Title

An introduction to helpful forecasting methods for hotel revenue management

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### Abstract

Revenue management is a key tool for hotel managers' decision-making process. Cutting-edge revenue management systems have been developed to support managers' decisions and all have as an essential component an accurate forecasting module. This paper aims to introduce new time series forecasting models to be considered as a tool for forecasting daily hotel occupancies. These models were developed in a state space modelling framework which is capable of tackling seasonal complexities such as multiple seasonal periods and non-integer seasonality.

### Methods

An empirical study was carried out to illustrate how a practitioner may apply and compare the performance of different models when forecasting a hotel's daily occupancy.

### Results

Results showed that the trigonometric model based on the new modelling framework generally outperformed the majority of the other models. These findings are potentially useful to the entire revenue management community facing the challenge of accurately forecasting a hotel's daily demand.

### Conclusion

This paper demonstrated how a practitioner may apply and evaluate six different forecasting methods compared to the simple and intuitive approach called 'same day of last year', using real-life hotel daily occupancy time series. Of all these methods, the naïve method has been widely applied by revenue managers due to its simplicity. In contrast, the new modelling framework is not yet extensively used and has never been used to produce forecasts of daily hotel occupancies. The forecasting performance of those methods was assessed using six alternative accuracy measures. The findings are in line with those of Koupriouchina et al.

(2014), who concluded that different accuracy measures may provide contradictory answers regarding which one is the most accurate method.