Forecasting hotel arrivals and occupancy

Business, Industries



Abstract Forecasting hotel arrivals and occupancy is an important component in hotel revenue management systems. In this paper we propose time series approach for the arrivals and occupancy forecasting problem. In this approach we simulate the hotel reservations process forward in time. A key step for the faithful emulation of the reservations process is the accurate estimation of its parameters. We propose an approach for the estimation of these parameters from the historical data. We considered as acase studythe problem of forecasting room demand for the Ganjali Plaza Hotel, Baku, Azerbaijan.

The proposed model gives satisfactory result.

Introduction

Forecasting in the hotel industry is very useful for estimating or calculating a variety of factors that can assist management in strategic decision making. Given the perishable nature of tourism services, there exists an important need to obtain accurate forecasts of future business activity (Archer, 1987; Athiyaman & Robertson, 1992). Certainly, forecasting plays a crucial role in tourism planning both in the short and the long run. However, from a merely practical point of view, tourism industryis much more interested in getting good predictions in the short-term.

Needs in the hospitality, transport and accommodation sectors have become more short-term in focus, and they can change rapidly with changing market demand. Therefore, increasing the accuracy of short-term forecasts is an essential requirement to improve the managerial, operational, and tactical decision-making process especially in the private sector. Because of the

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any possible improvement in the

large number of existing hotels, any possible improvement in the methodology will amount to potentially very large overall savings. In recent years there has been rapid growth in the inflow of tourists to Azerbaijan.

Declaring 2011 the Year of Tourism in the country has opened up new opportunities for further development in this field. In a modernizing Azerbaijan construction of hotel complexes, a high level of service has become widespread. The number of hotels in Azerbaijan is growing every year as the number of foreign tourists visiting the country. In 2002, the country had 70 hotels and hotel complexes, and visiting tourists were just over 800 thousand, now number over 500 hotels, and tourists - more than half a million. According to the Ministry ofCultureand Tourism 40 new hotels is currently under construction in Azerbaijan.

Today, the hotel fund of the republic consists of 31 thousand places against 9000 in 2002. As a result of the state program of tourism development up to 2016 capacity of hotels and recreation areas should be increased to 150 thousand. At the present time in Baku, mainly the business -and congress tourism is developed, which participants are only five-star hotels. Therefore in Baku there is a lack of hotels class " three or four" stars with reasonable prices and good service. Ministry of Culture and Tourism of Azerbaijan is preparing a special offer for construction in the city hotels of different categories.

There are currently functioning in Azerbaijan 499 hotels and hotel-type facilities. 312 of them operate on the basis of licenses issued by the Ministry of Culture and Tourism, and 187 - is illegal. Overall, about 80 hotels and facilities for recreation in the country have received the category of " star". https://assignbuster.com/forecasting-hotel-arrivals-and-occupancy/

Today in Azerbaijan exist 17 five-star hotels, 13 of them - in Baku. 34 fourstar hotels, 21 of which are located in Baku, the rest - in the regions. Of the 27 three-star hotel 18 is also located in Baku. In addition the republic has 6 two-star hotels.

From five-star hotels the most popular are The Boutique Palace Hotel, Hilton Baku, Excelsior Hotel Baku, Grand Hotel Europe Baku, Palace Hotel Baku and others, among four-star hotels - The Ganjali Plaza Hotel, Riviera Hotel Baku, Austin Hotel Baku, Ramada Baku, Hyatt Regency Baku, etc. , three-star hotels - Sea Port Hotel, Sun Rise Hotel Baku, Metropol the Hotel, Azcot Hotel, two-star hotels - Baku Palace Guesthouse, Baleva, Royal Guest House Baku, and finally one star hotel - Nur-2 hotel. So as we conduct research based on data about The Ganjali Plaza Hotel, should review it further.

In 2008 industrial - commercial company " Ganjali " completed and put into operation the hotel " Ganjali Plaza. " The hotel is centrally located opposite the boulevard, within walking distance of the city's attractions and shops. The area of 4000 sqm hotel. An eight-story building with elevators there is. The hotel Ganjali Plaza handed comfortable accommodation to services of lodgers. This 4-star hotel is located in Baku city centre, a 10-minute walk from the Old Town district and the Heydar Aliyev Palace. The Ganjali Plaza Baku offers free Wi-Fi and elegant interiors.

The classic-style rooms at the Ganjali Plaza Hotel feature stylish wooden furniture and floors. All rooms are air-conditioned and include satellite TV and a private bathroom with bath. Breakfast is provided each morning at the Ganjali Plaza. Guests are also welcome to relax in the bar with its rich wooden and glass furnishings, or in the fitness room. Reception at the

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Ganjali Plaza is open 24/7, and includes a tour desk and ticket service. Shuttle services and car rental are also available. We considered as a case study the problem of forecasting room demand for Ganjali Hotel, Baku, Azerbaijan. Methodology In this topic the data set is discussed and the time series models used in this study are briefly explained. The data set Figure 1: The time series plot of the monthly guest arrivals data from January 2011 to December 2011. From the plot, it is clear that tourist arrivals has generally increased and decreased time by time and obviously it is not a stationary time series. There also appears to have some sort of seasonal pattern in it.

There are also some unexpected dips and some events may have contributed to a drop in guest arrivals at these points of time.

Time series

In statistics, signal processing, econometrics and mathematicalfinance, a time series is a sequence of data points, measured at successive times. Time series analysis comprises methods for analyzing time series data in order to extract meaningful statistics and other characteristics of the data. Time series forecasting is the use of a model to predict future values based on previously observed values.

Time series are very frequently plotted via line charts. In evenly spaced time series, the time intervals between data points are all equal, while in unevenly spaced time series the intervals differ. Time series data have a natural temporal ordering. This makes time series analysis distinct from other common data analysis problems, in which there is no natural ordering of the observations. A time series model will generally reflect the fact that

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observations close together in time will be more closely related than observations further apart.

In addition, time series models will often make use of the natural one-way ordering of time so that values for a given period will be expressed as deriving in some way from past values, rather than from future values.

Time-Series Behaviors

- Trend
- Seasonality
- Cycles
- Irregular variations
- Random variation
- Trend Trend

A long-term upward or downward movement in data.

- Population shifts
- Changing income

Seasonality Short-term, fairly regular variations related to the calendar or time of day. Restaurants, service call centers, and theaters all experience seasonal demand Cycle Wavelike variations lasting more than one year. These are often related to a variety of economic, political, or even agricultural conditions Random Variation Residual variation that remains after all other behaviors have been accounted for Irregular variation Due to unusual circumstances that do not reflect typical behavior

- Labor strike
- Weather event

Time-Series Forecasting

Averaging These

Techniques work best when a series tends to vary about an average. Averaging techniques smooth variations in the data They can handle step changes or gradual changes in the level of a series Techniques: Moving average

- Weighted moving average
- Exponential smoothing

Later I will give a brief overview of techniques used in this study in the rich and rapidly growing field of time series modeling and analysis.

Moving Average or Smoothing Techniques

Inherent in the collection of data taken over time is some form of random variation. There exist methods for reducing of canceling the effect due to random variation. An often-used technique in industry is " smoothing". This technique, when properly applied, reveals more clearly the underlying trend, seasonal and cyclic components.

There are two distinct groups of smoothing methods

- Averaging Methods
- Exponential Smoothing Methods

Exponential Smoothing is a very popular scheme to produce a smoothed Time Series. Whereas in Single Moving Averages the past observations are weighted equally, Exponential Smoothing assigns exponentially decreasing weights as the bservationget older. In other words, recent observations are given relatively more weight in forecasting than the older observations. In weights assigned to the cheerystians are

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the case of moving averages, the weights assigned to the observations are the same and are equal to 1/N.

In exponential smoothing, however, there are one or more smoothing parameters to be determined (or estimated) and these choices determine the weights assigned to the observations. 3. The Ganjali Plaza Hotel Case Study We applied the proposed forecasting model to the problem of forecasting the arrivals and the occupancy of the Ganjali Plaza Hotel, Baku, Azerbaijan, as a detailed case study. In collaboration with the hotel, we apply our proposed forecasting model to the hotel's data. The Hotel Data We have applied the proposed forecasting model on this data of the Ganjali Plaza Hotel.

The Ganjali Plaza Hotel monthly guest arrivals data from January 2011 to December 2011. We have obtained a full set of data covering the period from jan-2011 until dec-2011. The set of the data include only the reservations. We forecast a month ahead using the last twelve months of the data. In next section we present the results of our study.

Results

The Ganjali Plaza Hotel occupancy forecast for January 2012 using Exponential Smoothing method. Spreadsheet Showing Results Using w = 0. 4(damping factor= 1-w= 0. 6).

Conclusion

In this paper we have proposed model for hotel arrivals and occupancy forecasting using time series method. We considered as a case study the Ganjali Plaza Hotel of Baku, Azerbaijan. The proposed forecasting model achieves good forecasting accuracy and beats other competing forecasting models.

In other words, it estimates the whole picture of what will happen in the future for all processes, and in a probabilistic way.

We used these data to determine the forecast for January 2012 occupancy rate. For this purpose we implemented two techniques of time series methodology such as exponential smoothing and moving average method.

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