# Detecting the reasons of canceling reservations in hotels

## Background

It is more than common in these days to employ computer programs and services to support management and decision taking. The contemporary algorithms and artificial intelligence (AI) techniques encouraged the involvement of automated decision support systems in every business-oriented information system, especially ERP programs, to analyze problems, detect factors, propose solutions, and help in improving or building new strategies using data-driven approaches.

On of the applications of these services is hotel management application. It started as invoices application which developed to include keeping the reservation information. Later, it added automated reservation services. After many reservations, the data can be analyzed to detect reservation problems' factors and expect results.

Canceling reservation is one of the most common problems in hotel reservation services. Many expected factors affect this problem like the reservation location, the hotel rate, the price offer, and most importantly, the history of the client and his solemnity. The modern techniques can elicit the question of what these factors are based on data-driven analysis and data mining in the reservation records.

## Importance of study

The importance of the study is derived from its function. Reservation imply the fact that the asset will not be usable until that reservation is over which prevent any exploit of that asset. This is acceptable as the expected outcome of that reservation is granted. However, cancelling the reservation prevents the usability of that asset and eliminate the outcome. In hotels, canceling reservation have a higher impact as it eliminates the main purpose of the business which is to rent the rooms. While there are many consequences for reservation canceling, it is better to avoid that cancel in the first place. We can avoid that cancel, or at least measure the risk of cancelation, by knowing the effective factors that result in cancelation.

## Project Scope

This study proposes a model for an application programming interface (API) that integrates with the hotel management systems. This API can detect the possible reasons of canceling reservation in hotel to be used in predicting the risk of canceling a reservation based on data-driven analysis for the reservation history.

## Project Description

The current state of hotel management and reservation systems is interrelated and cooperative. Almost all reservation systems provide API for the third-party reservation systems which promote the offers and spread the popularity of the hotel. This means we have three main stakeholders in the reservation process: the hotel management, the external reservation promotional, and the client. Although the process is automated, it can be improved by implementing data mining and AI techniques to solve the major problems. We still do not have a concrete API that can evaluate each reservation process to control that process accordingly in the matter of price, payments, and priority.

This study aims to provide a technique that can detect the reasons behind reservation cancelling. These reasons are to be evaluated and weighted where they can be used later to evaluate reservations with similar parameter values. This technique is to be shaped in a ready to implement model that specify the inputs, processes, and output of factor detecting processes. The outputs of this technique is a weighted factor rule that will be added to the factors knowledge base to be checked in later reservations.

## Expected Outcome

The expected outcome is a design model for detecting reasons of hotel reservation cancelling with API to be integrated with the reservation systems.

## Method/Approach

To achieve the objectives of this study, we will start by investigating the popular reasons behind the reservation canceling. Then, we will find the indicators implement these reasons. After that, we will extract the factors of these indicators. Finally, we will propose an alternative automated technique for each step.

## Relevant references

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