Business Analytics in Hospitality Industry

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ABSTRACT:
With the growing globalization, these always a need to move, amend business strategies. Dealing with even the smallest data you get can impact your business significantly. This paper gives an insight to business analytics in hospitality sector, of how analyzing the scores data available, when brought into a closed loop, of the traditional system of working can positively impact the business sales, profits, increase savings and help look out for opportunities, to put the business a step ahead in market. We see the various aspects needed for business analysis and what fruitful results it can give.

Keywords: Business Analytics, Hospitality Industry, Business Intelligence, Data Analytics, Hotels.

I. INTRODUCTION
Hospitality is a service industry built on loyalty and services it provides. It includes various business streams from hotels, restaurants, to transportation and tourism sector.

It is a general saying in this industry that what they sell are perishable goods as a room not sold or a booking not done is lost forever. For instance a hotel having 60 rooms, applying math we see that we have 21,900 room nights to sell a year. Money s spent to make and maintain all these rooms all round the year. Every room that remains vacant decreases occupancy which is the revenue lost. So, maximum efforts are made to sell the most and hence make the most. Seeing the patterns emerge from how the markets move is a crucial observation to make, not only to sell goods but maximize profits, knowing the demand and market trends, that is how much is the person ready to spend for the good.

This requires huge amounts of right data to be processed and analyzed and understand the trends. While many see IT systems as a foundation utility that can be easily imitated, business intelligence can act as a driver to maintain sustained competitive advantage over competitors in the industry. It can serve means of preserving loyalty while facing competitive pressures.

II. NEED FOR BI IN HOSPITALITY
With globalization pushing businesses to their limits, and increasing competitions, industries cannot afford to lose out business. The hospitality industry once a booming sector, selling perishable goods, is nearing its great elation stage as more hotels and restaurants join the competition. Staying a step ahead in market is the only way to survive in this globalizing world.

Traditionally, hotels were more like renting inns, having a fixed tariff for any day earning a fixed income averaged annually (almost constant annual occupancy). But with land, property, maintenance, salary and other running costs expenses increasing it became difficult to go on the same way. The increasing competition forced to give more facilities better services but lower prices. This led to the invention of dynamic pricing to earn as much as you can based on current demand. Analyzing every data that the sector collected to try to figure out the demand curve was the main goal. As it is a closed loop telling the more you earn the better you can serve and the better you serve the more you earn.

Hence BI has given insights to unanalyzed useful records of data, covering the smallest details implementing algorithms to visualize and analyze these data sets and recommend what would be best for the business.
III. INPUT FEATURES

For any analytics certain inputs are needed, which form the base for applying statistics. It is crucial that the features selected have some relation with the desired output data set, to prevent under fitting of data. Hence the relation of different features is checked with some other feature or output to see the correlation. For instance, the most obvious is feature A, the number of rooms occupied, is directly proportional to output, say increase in revenue. Another feature B, say current rates, is inversely proportional to the output, revenue. In normal course the following features are most used in hospitality -

1. **Past Data** – Past bookings are most useful with daily occupancy details and respective tariff. To go a step ahead the analytics software with built in holiday calendar can help analyze how a particular vacation lying in particular time of the week can improve or deprive business. For instance, a vacation in connection with weekend gives a long vacation for people to travel, while a holiday on any weekend does no good for the business. Seasons are automatically recognized by past trends. Another target is to maintain corporate client records which informs them to renew near expiry, telling them why to choose you again.

2. **Analyzing Current Data** – Having an online software helps to know many things like the pace of booking, the current demand rates, etc. These current data are very useful as they help to cope with any sudden events that happen in the market without need of human intervention to adjust rates. For example, say government suddenly hikes taxes, this may instantly decrease demands. This can be easily captured and adjusted for by online current data analysis without human intervention.

3. **F&B and Ancillary Income** - In addition to rooms revenue, it’s important to understand how much guests have spent elsewhere in their stay. During the stay BA helps analyzing where every penny of the customer was spent, that is to determine apart from room tariff what ratio was spent on Food & Beverage and other facilities. This helps establishing a baseline for each account which can be measured over time. Ideally, we would find ways to increase this spend moving forward.

4. **Scrutinizing Room Types** - To assess the effect of room types on hotel’s overall revenue, it is important to know which rooms are in more demand and how much more are people willing to pay for it.. For each room type (Deluxe, Executive, etc.) that is offered with negotiated rate, the percentage of the business that is booked by that room type needs to be assessed. At the account level, this may help find opportunities to generate incremental revenue through adjusted pricing. At the segment level (for instance, the negotiated corporate segment) such scrutiny can often lead to inventory management revelations. We may find information that suggests that we should not offer discounted negotiated rates on premium room classes. Conversely, we may find that doing so – at the right price levels – is a good way to move distressed premium room type inventory.

5. **Feedback** - Customer feedback is one of the most useful data sources giving direct insights to optimize business. Getting feedback has been an old useful trend but manually going through thousands of forms and getting smallest insights of business gets impractical and time consuming. This is where data structuring comes in which helps in organizing data and comparing different parameter to get flaws or find plus points of business that need to improvised. A long term feedback analysis can spot trends from feedback that tell when is the right time for renovation.

6. **Knowledge of Competitors** - Another important aspect is to keep a track different data sources of competitors in locality. These may include data sources like current pricing strategies, advertising strategies, corporate clients, etc.
The first can be easily available from their website, also giving a hint of its occupancy. The other inputs need to be manually fed.

7. **Frequent Visitors (Also groups)** - The more a customer visits you the better he feels your services are, they form the loyal members. Not only do they fetch you revenue directly but mouth publicity helps a lot. Hence it is important to be in touch with them and know when they are most likely to come. A repetitive task of maintaining counts and recording periodicity is required, which can be well done by analytics software. A very important use of this data is listed in the next section.

8. **Data of travel agents / travel portals** - A travel agent / travel portals are important sources for customer. Keeping a track of bookings from them becomes an important factor in deciding the TAC (Travel Agent Commission). As more the booking he give more TAC you can provide him. Also, keeping them updated with the present trends of your hotel and reviewing customer feedback increases your hotel listings in these portals.

9. **Search engine traffic** - With the advent of internet more customers find you online. Integrating software like Google Analytics and Google Business to see where your web traffic is coming from helps to know your customer outreach and improve online and outdoor advertising strategies. A table of when an advertisement was posted and what was its effects in increase in number of calls, web-traffic, enquiries, etc will help compare these different strategies.

After data has been collected from various sources it needs to be transformed to a common database so it can be processed and evaluated based on various input features. Here methodologies like ELT (Extract Transform and Load) are used. This is kind of pre-processing stage.

Most of the data collection and pre-processing are implemented using IT tools that also provide great user-friendly tool to work with for novice simultaneously structuring the data.

**Figure 2. Knowledge Discovery of Database**

**IV. ANALYSIS AND RESULTS**

Once the company has all its data collected and structured it wants a meaningful results from it. Hence using various methodologies like Knowledge Discovery and lots of math and statistics, the dominant patterns from data are extracted. Most of these methodologies needed are be integrated in the software using outside software dependencies like Tableau, even Excel works great to solve statistics and can be integrated via MS Visual Studios. The most common analysis and outputs resulting from these are -

1. **Target Promotional Emails** - To keep in touch with your loyal customers it is important to send them emails messages regarding the latest trends at your place. The more specifically it is addressed to a customer the less are the chances of mail landing up in trash or spam list. The BA helps keep a track of when a customer visits, like in monsoon, new year (party times), off-season (low tariff times), etc and now his tastes so emails can automatically be sent to target customers prior those events with special packages. Birthday / Anniversary records help send attractive wishes and discount coupons to the loyal ones. Similar mailing system applies to frequent groups and conferences visiting.

2. **Advertisements** - As mentioned above using data analytics one can help decide the best time and strategies of advertisement. This not only saves unnecessary expenses but helps targeting right customers and also increasing customer outreach.
3. **Loyal customers / Agents and Membership programme** - A membership programme gives a unique ID to your customers and helps in data structuring. A better tariff can be provided for loyal customers and frequently visiting groups.

4. **Predicting renovation times and improvement of services** - Feedback helps improve services and also deciding the best renovation times providing the least revenue loss and best time to invest.

5. **Staff rating and salary increases competition** - A very important aspect in big companies is to map out how each staff is performing. Instead of keeping a hierarchy level to keep watch on the lower one, an efficient way is to map out aspects of feedback to a particular task serviced by the staff. For instance if housekeeping review by a customer was good then the staff that serviced that guest performs well. A staff rating helps increase good competition within them, also a dynamic salary system according to rating directly brings fast improvements.

6. **F&B menu ratings** - F&B forms the second most important revenue source in hotels which is directly dependent on taste and quality, a monthly cuisine style according to seasonal tastes and weekly menu refreshing only restoring the food of the month (The highest rated by customers).

7. **Handling Travel Portal Inventories** - Business Analytics can automatically help reduce or increase online travel portal inventories according to business needs. A travel portal charges a minimum of 15% TAC (Travel Agent Commission) on rooms it sells. Hence, if occupancy is good and the rate of bookings are fairly increasing BA can help automatically close out inventory saving the 15% TAC. Similarly vice versa works in case of lower occupancy.

### V. SUCCESS STORIES

If we compare some elite hotel in a metropolitan city running in traditional ways the increasing globalization may have hit it by now. Just buying and selling rooms at a fixed rate or unable to make up for occupancy is its revenue lost.

For instance, the El Cortez Hotel and Casino opened in Las Vegas 1941. The property offers 364 rooms and a wide range of food and beverage options. The property, much like the rest of the Las Vegas market, was hit by the economic downturn in 2008. The recession changed consumer-spending behavior and the hotel realized it needed to jolt revenues. In 2013 the hotel implemented the Duetto application as the foundation for their revenue strategy, a cloud-based system that gave insights through market intelligence, accurate forecasting, pricing recommendations and historical data comparisons. The system’s unique Smart Alerts feature highlighted key dates that needed attention, which would normally be overlooked. This created a 30% increase in cash revenue, 10% increase in ADR and 109% increase in direct room nights. The hotel also grew its occupancy rate by 4.5%.

Another hospitality group named, Trump Hotel Collection, implemented similar system. Nathan Crisp, Vice President, Revenue Management & Distribution of the group said “With open pricing, we can optimize that demand with flexible and precision pricing across all channels and segments. By never closing out rate plans and only yielding our offers up and down every customer has the opportunity to book regardless of length of stay, day of arrival and other restrictions we historically have used. This allows us to not only maximize revenue on our high demand days but also improve our shoulder dates as well”.

Usha Ascot, a unit of Best Eastern Hotels Ltd., a resort running in traditional ways with its name and fame in Matheran, thought BA to be an expensive investment when the hotel was already running good. But, slowly the management realized with the dropping annual sales and revenues that there market was diverting, and the destination was no more favored only by the elite class, so they could not just earn money by keeping the tariffs high. In 2015 with the installation of the new analytics software they were now able to analyze when they could sell their rooms at lower tariffs to earn from economies of scale (higher occupancy) while keeping the seasonal strategies the same. This implementation significantly improved the occupancy as well as revenues by approximately 12%.

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