MBAS905: Assessment 1

Case Study Analysis Report

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Executive Summary

As the technology is advancing every industry is trying to adapt to the changes and use it to gain competitive advantage. Hospitality and Tourism industry is no different. Since the inception of the hospitality industry technology has played a key role in shaping the industry over time. The latest advancement in technology is big data and analytics. Hospitality industry has been rapidly adapting this in every aspect of day-to-day managerial work leading to customer satisfaction.

In this report we will discuss some of the ways hospitality and tourism industry has evolved and changed the way it functions in the past, how it is using the modern technological architecture to enhance their management and analyse data efficiently to serve their customers better and maximize profits. We also discuss where the industry is heading in future and how evolving technology will help streamline the advancements in the field.

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Introduction

Businesses need to look at their past to understand the market trends and better prepare for the future using the data gathered. Organisations have been collecting data for a long time, even before digital systems were in place. This data, in today's age is invaluable asset of the company. With the help of this data organisations are able to make vital decisions for profit of the company and gain advantage over their competitors.

In the past two decades machine learning and artificial intelligence have transformed the way every industry process and analyse customer and market trends. Customer data has become the most valuable asset for every organisation to advertise products and services personalised to every consumer. As a result, it is gaining attention from all fields to adopt and utilize this new technology to gain competitive advantage. Hospitality and Tourism has also started catching up with the trend and adopting big data and many sophisticated techniques to analyse the big data (Li et al. 2018, p. 301). Due to the ease of exchange of information about products and services in the form of online reviews and recommendations which has become a source of new opportunities as well as new challenges for the hospitality and tourism industry (Ladhari & Michaud 2015, p. 36).

Hospitality and tourism industry now has huge amounts of data from service provider as well as the consumer (Mariani & Baggio 2022, p. 231) but researchers argue that data does not translate to knowledge (Line et al. 2020, p. 104). Therefore, having access to data does not inherently make the organisation an informed decision maker (Biren et al. 2013, p. 1). Moreover, as big data is increasing at an exponential rate and the incoming data is unstructured, the challenge to analyse and interpret to gather knowledge continues to intensify. The conflict between automated and manual decision-making is likely to continue to hinder the effectiveness of big data and data analytics (Egan & Haynes 2019, p. 25).

The aspects which are heavily influenced and take advantage of the data and will continue to improve are revenue management, customer experience and target marketing. With the use of online review platforms such as YELP, TripAdvisor, etc. organisations learn which service they can improve on and if the customers have a good experience. Using this information, they can also find the target market and strategize to market to the correct audience. Organisations use predictive analysis to forecast the demand and prepare accordingly. The

purpose of this report is to throw some light on pre-technology era, its development with technology since the adoption of business intelligence and future prospects.

Big Data, Artificial Intelligence and Business Analytics

Big data

Big data can be regarded as the one of the latest and arguably biggest milestones in technological advancements for practice and research purposes (Lv, Shi & Gursoy 2022, p. 145). In recent years, applications of big data are growing exponentially, both, in economic as well as social aspects of life. Big data was initially defined by 3V; Volume, Variety, Velocity (Laney 2001) but over the years Value (Gantz & Reinsel 2011, p. 1), Veracity (Elgendy & Elragal 2014, p. 214) and Variability (Gandomi & Haidar 2015, p. 137) were added making the definition 6V.

Big data has both feature-oriented and process-oriented perspectives. We will focus on process-oriented perspectives for the scope of report. Process-oriented focuses on collection, storage, management, and analysis of the raw data which is hard to analyse using traditional analysis tool. Therefore, process-oriented process also deals with modern architecture and technology to extract value from the data.

Artificial Intelligence

Artificial Intelligence was traditionally used to define automation in computer science. During the fourth industrial revolution characterised by automation in industry using machine learning and big data (Tussyadiah 2020). AI can be used for many different use cases such as mechanical, analytical, empathetic, and intuitive (Huang & Rust 2018, p. 155). Flowers (2019) further categorised AI into weak AI and strong AI. Weak AI deals with repetitive tasks and lacks learning and adaptive capabilities. Strong AI on the other hand, can adapt to more complex tasks which require higher data processing power and learn from them. This gives AI limitless possibilities including learning to think like a human (Shi, Gong & Gursoy 2020, p.1714).

Business Analytics

Business Analytics can be defined as using big data, machine learning and AI to analyse data and making business decisions in order to optimize the systems and maximize profits.

Business Analytics uses modern business intelligence, graphical representation, and different algorithms to gain insights such as seasonal and annual trends that would otherwise be missed. It also helps the industry analyse the external data not generated by the organisation. By doing this the company can make necessary changes to their products/ services which will create more customer satisfaction and in return generate more profit. As the technology is continuously getting better and all the industries are using business intelligence and analytics in some way to offer greater value to its consumers.

Business Analytics in Hospitality in the Past

Hotels have been in the forefront of adapting to the changing technological advancements to enhance their effectiveness and efficiency (Leung 2021, p. 69). Initially hotels were just a temporary accommodation for travellers. The most basic idea of accommodation used to offer a room of one's house. This did not involve any smart technology. Hotels were a luxury affordable to only the rich class of society. Guest bookings were usually done on arrival and there were no revenue system or targeted market segments to orient their resources at to maximize profit. Even then, front desk of the hotel was a strong point to collect data of consumers which was stored offline. The marketing and review system involved good word of mouth from previous customers. This was largely due to the fact that there was less competition in the industry. Since then, things have changed and there are many new hotel groups entering the competition every day. Hospitality and tourism industry started receiving interest from the scholars and it became topic of research in the industry and innovation slowly became the key to succeed in the business.

The first ever electronic automatic reservation system was launched in 1958 (Sheraton, 2019), only 7 years after first commercial computer was launched. Since then, international hotel chains developed and faded out central reservation systems and moved on to cloud-based reservation systems which enable better management of the incoming channels. They also created custom proprietary user interfaces for in-room entertainment (Collins 2017). After the invention of the internet, it provided wider distribution of their services. Due to internet and popularity of search engine, search engine optimisation and search engine ranking became a major factor for the hotel chains to stay competitive (Leung 2021, p. 69).

Furthermore, the electronic word of mouth also influences the businesses as consumers look online for reviews before booking hotels.

Business Analytics in Hospitality in the Present

Today, due to vast amount of data that the hospitality and tourism industry has access to, managers at all levels use data analytics for improved decision-making. Modern technological advances have enabled hotels to take innovative approaches to handle its business activities to maximize profits. Today, data analytics is playing an important role in bringing about these changes in the industry. Few areas in which it is being used by hotels to better manage their services and products to gain competitive advantage are:

Revenue Management

Hoteliers use data analytics to develop strategies to manage revenue. The big data that is collected from many different online sources or hotel's personal data is then used to conduct predictive analysis to forecast the demand so they can prepare their services and products to capitalize on the opportunities.

Organisations use internal data such as bookings, occupancy rates, etc. along with external data sources such as events, holidays, flights schedules, etc. to forecast demand and capitalize on it (Yallop & Seraphin 2020, p. 257). Hoteliers have also started dynamic pricing which has quickly become an industry standard. Machine learning algorithms are used to optimize the pricing of the rooms which is based on room availability, market demands, seasonal trends, customer budget and other customer needs (Bhattacharjee, Seeley & Seitzman 2017).

One of the top examples of an organisation known to successfully using big data and other tools to gain competitive advantage is AirBnB (Guttentag 2019, p. 179). AirBnB streamlined a sector to industry that was primarily individual small businesses. It consolidated the concept of offering a spare in one's house and made an application to find all of them at one place, making it convenient for both: consumers and small businesses.
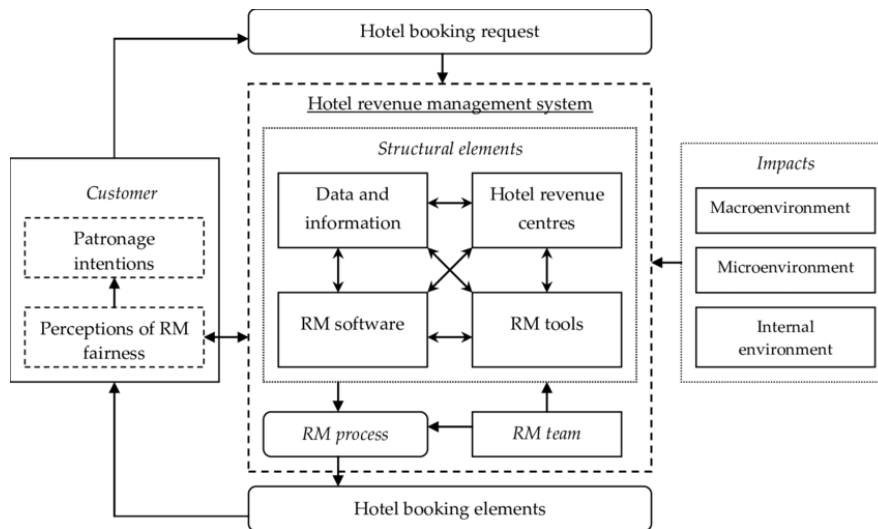
Figure 1: Revenue Management System (Source: Ivanov 2014)

As discussed before and as can be seen in figure 1 shows that revenue management system is affected by both: internal and external factors. Therefore, organisations need to use both to make informed decisions.

Customer Experience and Reviews

Hotels always collect feedback from their customers when they checkout. These feedbacks from customers and feedbacks online are collected and run through sentiment analysis algorithm to make sure that guests have a good experience. Another advantage of analysing feedbacks is if enough guests ask for a service that is not provided by the hotel, they can work on incorporating those services or collaborate with other organisations to provide those services and improve customer experience and generate greater revenue (Xiang et al. 2015, p. 120). For example, if enough number of customers request for certain gym equipment hotel can plan to refurbish their gym to satisfy the customers. Hotels today have many partnerships with various services such as taxi, restaurants, travel agencies, etc. Hotels also have partnerships with flights booking websites so whenever consumers look to book flights, they see advertisements for accommodation options at the destination locations. This increases the convenience for the consumers and also targets the right consumers which will discuss further.

Xiang et al. conducted a study in which they documented the process of collecting and analysing online brand reviews on popular websites like Expedia, Yelp and TripAdvisor and

how it is helping hoteliers to improve customer experience (2017, p. 51). The table below shows the size of the dataset, the hotels considered for the study and reviews used by hoteliers for the study.

Review Platform	N of Hotels	N of Reviews	N of English Reviews (percentage)	N of English Reviews per Hotel
TripAdvisor	443	438,890	438,826 (99.99%)	991
Expedia	467	480,589	351,182 (73.07%)	752
Yelp	581	30,816	30,770 (99.85%)	53

Table 1 Data set of customer reviews for analysis

According to many studies, consumers give more importance to negative reviews than positive reviews when it comes to deciding hotels to book and interpreting their reputation. "Locus of causality" is one of the least explored in hospitality industry. This can help hoteliers to learn from customer complaints to increase guest satisfaction and improving service quality (Sann et al. 2022, p. 1800).

Target Marketing

Hotels cater to a wide range of customers with different preferences- from business associates, families on vacation too travellers and influencers. Everyone comes from different financial backgrounds. In order to cater to such a wide spectrum of consumers they need to use business intelligence tools to analyse and build marketing strategies to cater to customer requirements.

The marketing team should analyse the customers who frequent their hotels and target that demographic. They can design the marketing campaigns and advertisements around this to attract that audience and recognise the opportunities to improve their services according to customer preference. Through timed advertisement campaigns and optimized plans hotels reduce the marketing costs and increase marketing effectiveness. Hotels who cater to families provide a plethora of kids' activities like game zones and parks, so kids are kept occupied while adults enjoy their holiday as well.

An example of this is the luxury brand MOXY, a subsidiary of Marriott Group, whose target market is mainly luxury youth hotels who cater to generation Z customers and therefore they are primarily based on Instagram to reach maximum audience (Horng et al. 2022, p. 22). It provides a more economical as well as fun option for the new generation. Their unique selling point of simplicity and hotels designed for people to socialise and unwind unlike the traditional concept of the hotels attracts the new generation. In addition to convenient IT solutions this subsidiary of the five star hotel has gotten rid of the more unnecessary amenities which are generally not used by this generation and budget conscious demographic giving consumers more flexibility over what they want from the experience.

Future of Business Analytics in Hospitality

It is envisaged that the hospitality and tourism industry will increasingly adapt the Big Data and Business Analytics at all levels of management and department to streamline the processes and increase speed. BD will continue to contribute to and improve research designs and methods. As the research in the field progresses the industry will be able to generalise the findings across different institutional, social, and economic contexts. As the technology advances further, it will be able to generate managerial insights in real time using business intelligence and data analytics tools. It will also help other big data applications in the verticals of hospitality and tourism industry (Mariani 2020, p. 299).

With the leaps hospitality and tourism industry has taken in adopting the technology we are not very far away from robot hotels with human-less services. Some hoteliers have already started using AI powered voice assistants with machine learning capabilities to perform tasks requested by the guests including voice activated ambient control in the rooms (Buhali 2020, p. 267).

With modern architecture and dynamic rooms to suit needs of different types of guests the business can strive to become sustainable. This will reduce the manpower required and optimized use of space and maximize usage. Further with the help of sensors and AI hotels will have more efficient use of energy (Leung, 2021, p. 69). Incorporating these changes can help the hoteliers give a personalised and 'smarter' experience to its guest in real time. We are already seeing some of these advancements in the industry. The hoteliers are always aiming to gain a competitive advantage. With these modernisations hotels can stand in a

competitive market and advertise their products and services to the right consumers and maximize their profits. Japan has built world's first AI robot operated hotel which makes up the primary staff called Henn-na Hotel. The hotel has human staff on hand for guest on demand.

Another direction in which the hospitality industry is headed towards is space tourism. The need to optimally utilize all the available space to suit every customer's needs is higher than in regular hotels. The use of artificial intelligence and big data and more importantly analysing that data as fast as possible will play a crucial role in success of this industry and will lead to gaining competitive advantage. Autonomous fixtures and automated systems will result is reduced manpower requirement which in turn will minimize the manpower required (Leung 2021, p. 69). This will be a big leap for the hospitality industry and also a challenge for the organisations and researchers due to lack of data of space tourism.

Conclusion

It is evident that hospitality and tourism industry has gone through dramatic transformations in the past few decades and will continue to do so as the smart infrastructure, high speed networks and technology develops. It will provide for an efficient, real time exchange of data from databases enabling hoteliers to provide faster services.

Hospitality and tourism Industry is growing rapidly. Unlike the, there are new hotels coming in the business every day and the competition is getting high. Every hotel is targeting a different consumer category with their own unique set of services and offerings. Therefore, hoteliers keep coming up new offerings and discounts to attract new customers and maximize revenue.

Ambient management will slowly become the norm in every hotel. The data collected from external sensors will be used to provide a comfortable and cosy in room environment for the customers. Future hotels will have high use of Internet of Things (IoT) devices as part of the ambient environment. This will be an experience of customers and will be a great selling point for the hotels.

The competition is getting fierce in the market, and it will only grow in the future. Researchers are taking a lot of interest in the hospitality and tourism industry as a topic of research and

what makes customers attracted to one hotel over other. The use of artificial intelligence, machine learning and big data is gaining interesting of researchers too to apply in this area. To do the analysis of data in quicker, preferably in real time, is the challenge that the researchers are facing. This will bring whole new set of opportunities for the hoteliers to capitalize on and provide better services for the consumers.

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