

Analysis of the Digital Transformation of Big Data Era

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Abstract. Each industry is facing new challenges and opportunities, and many companies are embarking on a digital transformation journey to seek new breakthroughs and growth. Through the power of digitalization, they are actively attempting to transform their business models, enterprise operations, and business processes. The pandemic has had a certain impact on the hotel industry, but it has also provided an opportunity to accelerate the digitalization process of hotels. In the modern era, the hospitality industry has become more data-driven. As a result, hotels can leverage big data to enhance their daily operations, marketing, and customer experience. Hotels are now focusing on the digitization of guest experiences to improve service quality and enhance guest satisfaction. In this paper, the importance of using big data in hotel daily operations and marketing campaigns will be discussed. This research studies the digital transformation plan of the hotel industry through a literature review that provides the theoretical framework for further analysis. Then a case study approach is employed on The Ritz-Carlton Hotel Beijing, specific recommendations for using big data are proposed furtherly.

Keywords: Hospitality industry, big data, digital transformation.

1. Introduction

As the hospitality industry becomes more complex and competitive, hotels have found that utilizing big data is a key factor in achieving success. Big data refers to the vast amounts of information that are generated by hotels through guest records, financial transactions, social media interactions, and more. By analyzing and using this information effectively, hotels can make more informed decisions that lead to increased profits [1].

One significant advantage of utilizing big data is its ability to provide hotels with insights into customer behavior [2]. By analyzing guest data, hotels can learn what amenities guests prefer, what price points they are willing to pay, and what influences their decision-making process. This information allows hotels to tailor their offerings to guests' preferences, ultimately resulting in higher customer satisfaction and loyalty, which can then lead to increased profits [3].

Another way big data helps boost profits is through efficient pricing strategies. Yield management is the process of adjusting the price of hotel rooms based on factors such as demand, competition, and seasonal fluctuations. By analyzing past data, trends, and other external factors, hotels can develop a pricing strategy that maximizes revenue. Oftentimes this involves dynamic pricing or changing prices in real time to adapt to changes in circumstances.

Big data can also be used to improve operations within a hotel. By analyzing efficiency data such as staff productivity and inventory usage, hotels can identify inefficiencies and make more informed decisions on how to optimize business processes. This can lead to cost savings that contribute to increased profits.

This paper conducts a thorough literature review first, which involves searching for and analyzing relevant literature from databases such as China national knowledge infrastructure and Google Scholar. The purpose is to gain an understanding of this research and to build a theoretical foundation for the study by reviewing the conclusion and progress presented by former researchers in this field.

Then a case study is adopted. This paper focuses on the Ritz-Carlton Beijing hotel and uses the theoretical framework of precision marketing in this paper on big data. This research analyzes the specific situation of the Ritz-Carlton Beijing hotel and develops marketing strategies that can be used to optimize the hotel's digital marketing efforts. The case study approach is used to analyze the current

marketing situation of the hotel and to propose recommendations for marketing strategy optimization. The conclusions of this study may have implications for other hotels in the same industry.

2. Defination of Big Data

Big data refers to the massive volumes of structured, semi-structured, and unstructured data that are generated every day by individuals, businesses, and organizations. It is characterized by its velocity, variety, and volume, and is typically too large to be processed by traditional data management systems [4]. Big data is often used to gain insights and make informed decisions in various fields, such as healthcare, finance, marketing, and manufacturing.

The volume of data generated by individuals and businesses has exploded in recent years, driven by factors such as the growth of the internet, the proliferation of mobile devices, and the rise of the Internet of Things (IoT). Big data is not just about the amount of data, but also about the speed at which it is generated and the variety of data types that are included. Traditional data processing systems are often unable to handle such large amounts of data, which is where big data technologies come into play. One of the key features of big data is the ability to identify patterns and relationships between different data points. By analyzing large data sets, organizations can uncover insights that would be impossible to find using traditional methods.

Big data technologies typically include a range of tools and techniques. These technologies enable organizations to store, process, and analyze large data sets quickly and efficiently. In addition to these tools, big data requires a skilled team of data scientists and analysts who can interpret the data and extract insights.

While big data presents significant opportunities, it also poses several challenges. One of the key challenges is data privacy and security, as large data sets are often vulnerable to cyber-attacks and data breaches. Another challenge is the sheer complexity of big data, which requires significant investments in hardware, software, and human resources. Despite these challenges, big data continues to be a driving force behind innovation and growth in many industries.

3. The Ritz-Carlton Beijing's Practice in Big Data Application

The Ritz-Carlton is a Marriott-owned luxury hotel company that is renowned for providing premium high-end services to its clientele. Since 1983, the hotel chain has built a reputation for delivering unmatched hospitality experiences for guests around the world. The Ritz-Carlton Beijing is a luxurious hotel located in the heart of China's capital city. With its central location in the Chaoyang District, it offers easy access to the city's most popular attractions, including the Forbidden City, Tiananmen Square, and famous shopping malls. The hotel can provide 305 elegant guest rooms and suites for customers. Rooms are decorated in a sophisticated, contemporary style with a warm color palette and luxurious furnishings.

In recent years, the hospitality industry has been using big data to increase profits by improving customer experiences and streamlining operations. One way the Ritz-Carlton hotels utilize big data to boost profits is by gathering information about its guests through various channels, such as its loyalty program, online reviews, and surveys. By analyzing this data, The Ritz-Carlton can identify key customer preferences and tailor its amenities and services to meet those needs better. In doing so, the hotel can create a more personalized experience that is highly valued by its guests. As a result, guests are more likely to return to the hotel and are more likely to recommend the hotel to others, thereby increasing revenue and profits.

Another way The Ritz-Carlton optimizes profits is by improving the process of revenue management. The hotels can use data analytics to forecast demand and anticipate fluctuations in demand for each segment of the business. By tracking this data and utilizing revenue management systems, such as dynamic pricing, The Ritz-Carlton can optimize pricing for rooms and services, thereby increasing the hotel revenue without significant capital costs.

Furthermore, The Ritz-Carlton uses data analysis to improve its operational efficiency. With insights obtained from data analysis, hotel managers can identify trends in guest behavior and operational issues. By resolving operational issues quickly and efficiently, The Ritz-Carlton can reduce costs and increase staff productivity, thereby improving profits.

3.1. Brand Segmentation of the Ritz-Carlton Hotel

The Ritz-Carlton Hotel is a luxury hotel brand that caters to affluent travelers seeking exceptional service, amenities, and accommodations. The brand's segmentation is based on various factors, including:

3.1.1 Demographic segmentation

The Ritz-Carlton targets affluent travelers who are willing to pay a premium price for high-end accommodations and exceptional service. The brand targets both leisure and business travelers, including families, couples, and individuals.

3.1.2 Geographic segmentation

The Ritz-Carlton Beijing operates in the capital city in China. The hotel targets international travelers seeking luxury accommodations and high-end experiences.

3.1.3 Psychographic segmentation

The Ritz-Carlton targets travelers who value luxury, exclusivity, and exceptional service. The brand caters to individuals who seek unique experiences and are willing to pay a premium for them.

3.1.4 Behavioral segmentation

The Ritz-Carlton targets repeat customers who are loyal to the brand and value the exceptional service and accommodations offered. The hotel also targets customers who are seeking luxury accommodations and experiences for special occasions, such as weddings, honeymoons, and anniversary celebrations.

3.2. 4P's Analysis of the Ritz-Carlton Hotel

3.2.1 Product

The Ritz-Carlton Hotel's product is luxury hospitality experience. It offers world-class amenities such as high-quality linens, premium toiletries, and top-of-the-line fitness facilities. The hotel also provides personalized services such as personal shopping and concierge services, making sure that guests' every need is met. Ritz-Carlton's accommodations are known for their luxurious design, with elegant furnishings, spacious layouts, and stunning views.

3.2.2 Price

The Ritz-Carlton's premium pricing is reflective of the hotel's reputation for exceptional service and exclusive amenities. The hotel's prices are higher than those of most other hotels in the same market, but guests are willing to pay the premium for the unique experience that the Ritz-Carlton offers.

3.2.3 Place

The Ritz-Carlton Hotel is strategically located in prime destinations such as major cities and tourist destinations worldwide. The hotels are often located in the heart of the city or near major attractions, making it easy for guests to access local sights and activities.

3.2.4 Promotion

The Ritz-Carlton Hotel promotes its brand through various channels such as advertising, public relations, social media, and direct marketing. The hotel emphasizes its commitment to providing the highest level of service and creating unique experiences for its guests. The hotel also promotes its

loyalty program, which offers exclusive benefits to its members, such as room upgrades, complimentary meals, and access to VIP events.

3.3. The Necessity of Digital Transformation for Hotels

Over the past decade, the compound growth rates of the catering and tourism markets were 11.4% and 18.3% respectively. The tourism market has become one of the driving factors of the growth of the tertiary industry economy. The COVID-19 pandemic has had a certain impact on the hotel industry and tourism services. A report by iResearch indicates that the areas most affected by the pandemic during this period were dining out, business travel, and domestic and international tourism, which are closely related to the hotel industry. Due to the special nature of its products and services, the hotel industry was almost stagnant during the pandemic. According to STR data, the hotel occupancy rate in China reached a high point of 70% during the Lunar New Year in January 2020, but quickly dropped to the "freezing point" of 17% after the outbreak [1]. The data shows that starting from January 23rd, the hotel occupancy rate has declined sharply, and current business volume has decreased by over 95% compared to previous years during the Spring Festival. The occupancy rate has decreased by 46.54% year-on-year, revenue per room has decreased by 72.57%, and the total revenue of the hotel has decreased by 67.81% year-on-year [5]. Chain hotels began to expand online businesses such as takeout to ease financial pressure under the pressure of operating costs such as cash flow. As the epidemic situation is slowing down, people's demand for travel is gradually recovering, and the hotel industry is gradually beginning to recover. However, customer demand, revenue structure, marketing methods, etc. have all changed. In the new situation, the hotel industry hopes that digital transformation can bring innovation and new growth points for the industry and enterprises [1].

With the arrival of the digital economy era, the first step people take in making travel decisions is information search. The hotel operating environment and tourist behavior patterns have also undergone significant changes. In China, the scale of online travel transactions has been increasing year by year, and more and more people are choosing to book hotels online. Online reviews have become an important source of information for consumers to quickly understand and decide whether to choose a hotel [6].

4. Potential Challenges and Suggestions

4.1. Potential Challenges that The Ritz-Carlton Beijing Hotel might Face

The Ritz-Carlton Beijing hotel might face several challenges during a digital transformation. Some of these challenges include:

4.1.1 Resistance to Change

One of the biggest challenges that hotel face when undergoing digital transformation is resistance to change. Staff members may be accustomed to traditional methods and may not be comfortable with new technology [7].

4.1.2 Data Security

As hotels rely more on digital systems and technology, data security becomes a critical issue. The hotel must ensure that its systems and data are secure and protected from cyber threats and data breaches [8].

4.1.3 Integration with Legacy Systems

Many hotels still rely on legacy systems that may not be compatible with new digital technologies. Integrating new systems with old ones can be a complex and time-consuming process.

4.1.4 Cost

Digital transformation can be expensive, and hotels may need to invest significant amounts of money in new technology and systems.

4.1.5 Customer Experience

Customer Experience: While digital transformation can improve the customer experience, it can also have the opposite effect if not implemented correctly.

4.2. Suggestions

In the face of this situation, the Beijing Ritz-Carlton can gradually apply software services based on digital technologies such as the Internet of Things, cloud computing, and big data to daily operations. On the one hand, the hotel upgrades and optimizes its existing software systems, effectively utilizes data, and commonly manages its main business areas using information software, mainly the room and catering reservation management system, human resources management system, and financial management system. With the integration of existing systems using cloud computing and big data technologies, systems can be interconnected, and data can be shared. Big data analysis effectively guides hotel operations with the massive data generated [9]. On the other hand, introducing intelligent devices enhances the guest experience and improves the efficiency and quality of hotel services. Self-service check-in systems can alleviate the pressure of front desk check-in and check-out during peak periods, intelligent robots assist hotel employees in transporting items, and smart homes in guest rooms automatically adjust hardware facilities such as lighting and temperature based on customer preferences.

In terms of digital marketing, with the deepening development of mobile Internet and the arrival of the era of self-media, the penetration rate of online marketing continues to increase, and online new channels such as short videos and live broadcasts greatly enrich hotel marketing channels [8]. The Beijing Ritz-Carlton currently focuses on WeChat and traditional media as its marketing methods. The focus of marketing should gradually shift towards emerging media, especially on platforms where target customers are located, such as TikTok and Weibo. Cooperation with travel bloggers who are in line with the hotel's brand culture on emerging platforms can promote and publicize the hotel through the blogger's fan base and reputation. In terms of marketing channels, starting from building its own fan group and traffic pool, the hotel should improve its WeChat program, build its hotel app, and maintain the hotel's core fans, reducing its reliance on third-party platforms such as Ctrip.

From the perspective of digital products and services, the Beijing Ritz-Carlton hotel has unique natural and cultural resources and utilizes surrounding resources to enrich the diversity of product services and improve its competitiveness. The hotel is positioned as a high-end luxury hotel, based on a standardized five-star hotel, focusing on personalized and diverse services. The hotel is not just an accommodation scene for business travel but also a leisure and vacation destination on weekends. The hotel expands its business scope with the help of surrounding attractions in Beijing and integrates the surrounding resources into the hotel's guest rooms and catering products for overall sales through the internet platform [10]. In terms of guest room services, digital linen management, electronic hotel introduction manuals, and TV integrated management are introduced. In terms of catering services, electronic menus are used, and the scan code ordering function is introduced for restaurants and guest rooms, which can reduce the use of hotel paper printed materials, reduce costs, improve efficiency, and conform to the concept of low-carbon environmental protection.

In terms of organizational and operational management, the hotel can be more flexible in adjusting business processes and organizational structures according to development needs. Firstly, based on the transformation of business processes and management models by digitalization, an organizational structure suitable for digital transformation is set up. Then train all the employees in the hotel to learn how to use the new system [11].

5. Conclusion

In recent years, the impact of digital intelligence on various traditional industries has been evident, and the hotel and tourism industries are particularly affected. To survive, changes must be made. The emergence of smart hotels with different specifications and models has exposed the fragile nature of the hotel industry, especially after the outbreak of the pandemic. More than half of the industries and economies in the future will be presented in a digital manner, and in a more comprehensive and in-depth way. Therefore, with the advent of digitization, more practical and convenient service management should be used to improve labor efficiency, enhance customer experience, and improve the competitiveness of hotels. With the basic control of the COVID-19 pandemic and the rapid recovery of the Chinese economy, the development of the tourism and hotel industry will quickly return to normal. As an important part of smart tourism, smart digital hotels are a new hotel management model in China that adjusts the industrial structure and upgrades the service system of the hotel industry. It is necessary to change the existing concept, take green environmental protection as the starting point, and develop and construct based on the concept of energy conservation and consumption reduction, innovate hotel management models, and explore new development paths. The emergence of big data and artificial intelligence has brought unprecedented convenience to people's lives and work. In an era when the country encourages technological innovation, the hotel industry must keep up with the trend, play to its own advantages, innovate its management models, and will not fall behind no matter how the times change, and will create a unique world for the hotel industry.

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