

ROLE OF ARTIFICIAL INTELLIGENCE IN THE TRAVEL AND HOSPITALITY INDUSTRY

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ABSTRACT

The travel and hospitality (T&H) industries are embracing cutting-edge technology, including a high level of Machine Learning (ML) and Artificial Intelligence (AI). This is causing new levels of upheaval. Artificial Intelligence provides the ideal opportunity for travel brands to improve marketing, customer service, customer experience, and retention. Artificial intelligence has the potential to provide travel companies and hoteliers with previously unseen insights, and it will do so by collecting and analysing massive amounts of freely available customer data. Artificial intelligence is becoming increasingly important in hospitality management, owing to its ability to perform traditionally human functions at any time of day. This has the potential to save hotel owners a lot of money, eliminate human error, and provide better service. Customer service, in particular, is an essential component of the travel industry, with hotels frequently living and dying based on how they treat their customers. The possibilities for improving this aspect with artificial intelligence are nearly limitless, ranging from increased personalisation to tailored recommendations. Artificial intelligence is changing the way hoteliers do business by expanding the possibilities for creating a seamless hotel experience while also driving growth and optimising revenue. The concept of artificial intelligence as a technological aid is much larger, wider, and more pervasive than it is often misunderstood as a replacement for human power. It has, however, increased trust in the hospitality industry by demonstrating the promise of AI-powered robotics in transforming its processes, services, and facilities. Today, the hotel industry, where comfort-defining advancements are most rapidly incorporated, has refined its entire system by adopting numerous innovative methods for satisfying customer service. There have been many technological advances in artificial intelligence that can help you gain an advantage over your competitors. You can get ahead by interpreting important data more accurately and efficiently, automating daily operations so that your staff can focus on providing the best service possible, and improving the overall guest experience. Artificial Intelligence has the potential to improve the customer experience and increase guest retention. This article will cover artificial intelligence in greater detail, its benefits, and how to use artificial intelligence in the hospitality industry to help your hotel rise above the competition.

KEYWORDS: Tourism and Hospitality Industry, Artificial Intelligence, Machine Learning

INTRODUCTION

Artificial intelligence (AI) is based on large amounts of data, processing power, and algorithms. Each of these three elements has recently seen significant advancements as several trends have coincided: first, the refinement and advancement of artificial intelligence algorithms; second, significant improvements in processing capacities; and third, in the context of big data, the development of new and more powerful information sources and architectures that allow for the storage and processing of massive amounts of data. These advancements, in turn, have fuelled significant advances in artificial intelligence systems and robotics, a process is known as the Fourth Industrial Revolution (Li et al. 2019). Artificial intelligence (AI) is defined as "programmes, algorithms, and machines that exhibit intelligence" (Shankar, 2018, p. 6). Artificial Intelligence also includes machine learning, the Internet of Things, artificial neural networks, big data, smart robots, and virtual and augmented reality applications (Pereira et al., 2021). Artificial Intelligence is becoming more important as computing power increases, big data becomes more available, and machine-learning algorithms and models advance. It uses big data, processing power, and algorithms to complete many complex tasks (such as data collection, processing, and analysis) that would require intelligent effort if done by humans. These tasks serve as the foundation for many smart services and activities, have an impact on service-provider-customer interactions, and have numerous implications for service, operations, management, and marketing (Buhalis et al., 2019).

With an increase in travellers, service providers must differentiate themselves by providing highly personalised services while keeping guest preferences in mind. With the introduction of data analytics, the complex process of understanding guest preferences and monetizing guest data has advanced. ML is the best medium for learning and acting based on past experiences and improving operational efficiency to fulfil customer preferences cost-effectively. Deep knowledge of individual customer preferences allows the customer service representative or marketing team to recommend products and services that the customer is likely to use.

The ability of artificial intelligence to perform tasks that have traditionally required human cognitive function has made it particularly useful for those in the travel industry, as deploying artificial intelligence can save businesses time and money while potentially eliminating human error and allowing tasks to be completed quickly and at any time of day.

Most hotels and resorts rely heavily on providing excellent customer service to build their reputation, and artificial intelligence technology can help in a variety of ways. Artificial intelligence, for example, can be used to improve personalisation, tailor recommendations, and ensure quick response times even in the absence of staff.

With the growing importance of artificial intelligence among practitioners and academics, there has been a flood of research on artificial intelligence applications in T&H, particularly in the last three years. As a result, it is critical to review relevant research to comprehend the intellectual framework and flow of knowledge regarding artificial intelligence, revisit thematic evolution, and propose avenues for future research.

This article examines how artificial intelligence has changed and is changing the primary processes in the travel and hospitality industry.

LITERATURE REVIEW

Many researchers, including Gabbie and O'Neill (1997), Juwaheer T. D. (2004), Lau et al. (2005), Marković Sand Raspor S. (2010), Bostanji G.M.A (2013), Antoneta and Charles (2013), have studied hotel service quality from various perspectives, including dimensions of service quality, its impact on satisfaction and loyalty, quality gaps, and influencing factors (2014). Even though artificial intelligence is a relatively new development, very few studies on its application in the hotel industry have been conducted. According to Olsen and Connolly (2000), hotel customers' data is critical for meeting their changing needs and desires. Jurca and Fallings (2004) investigated an AI-based Reputation Mechanism for hotel bookings and discovered that it was effective in preventing financial fraud. Ivanov and Webster (2017) performed a cost-benefit analysis of robot, artificial intelligence, and service automation adoption. A review of the literature revealed a lack of studies examining the impact of artificial intelligence applications on hotel service quality and overall travel and hospitality industry development

OBJECTIVES

- To explore artificial intelligence technologies within the tourism and hospitality industry.
- To examine the contribution of artificial intelligence in strengthening tourism and hospitality service quality.

METHODOLOGY

This research relies on secondary data obtained from journals, hotel websites, and the web authored by travel, hospitality and artificial intelligence experts.

DATA ANALYSIS

For the time being, artificial intelligence is changing our lifestyles in several ways, such as modifications to education, finance, business, as well as manufacturing. Speech recognition services (Alexa, Siri), digital advertising networks, social media feeds, media streaming devices, and navigation apps represent some of the most well-known artificial intelligence applications. Tesla's self-driving cars, Amazon's drone delivery applications, personalisation dynamic video games, and smart homes are just a few examples of how artificial intelligence is influencing every aspect of our lives and businesses.

Applications of Artificial Intelligence within the Hotel Industry

The ability of artificial intelligence to perform tasks that have traditionally required human cognitive function has made it particularly useful for those in the travel industry, as deploying artificial intelligence can save businesses time and money while potentially eliminating human error and allowing tasks to be completed quickly and at any time of day. Most hotels and resorts rely heavily on providing excellent customer service to build their reputation, and artificial intelligence technology can help in a variety of ways. Artificial intelligence, for example, can be used to improve personalisation, tailor recommendations, and ensure quick response times even in the absence of staff.

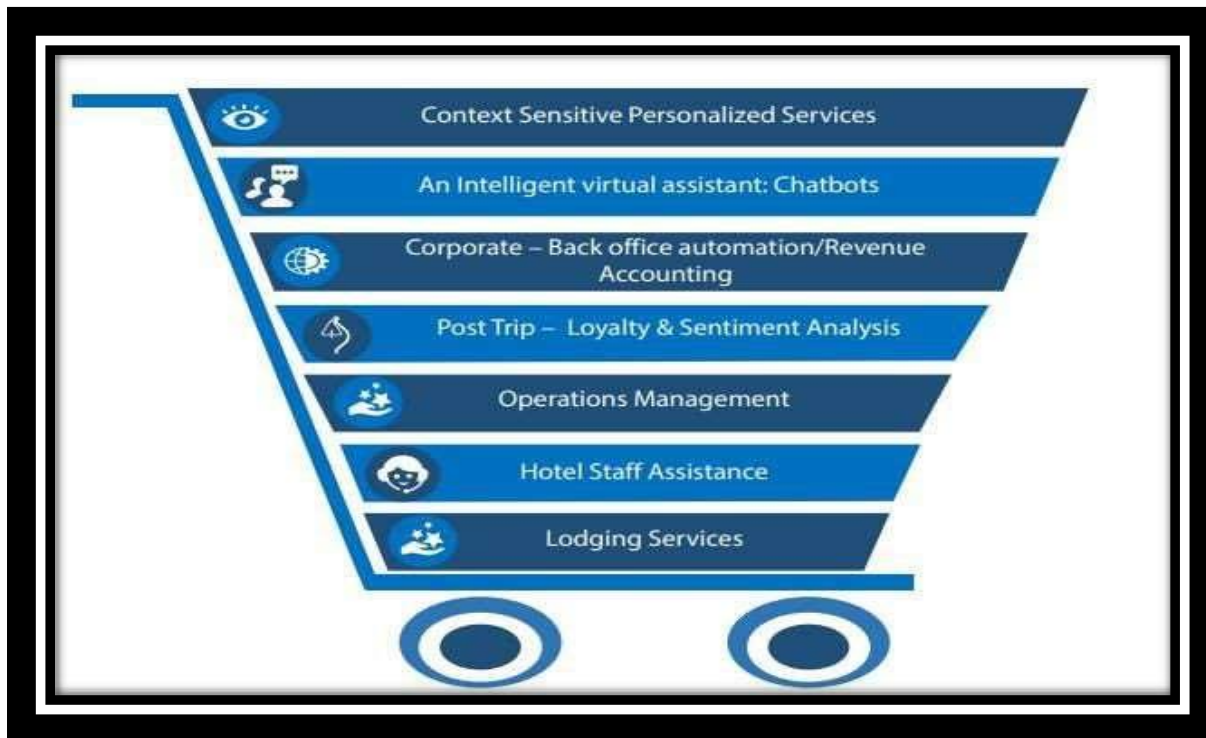


Figure 1 <https://www.infosys.com/industries/travel-hospitality/documents/ai-travel-hospitality.pdf>



Figure 2 <https://lesroches.edu/blog/artificial-intelligence-hospitalitys-professional-certificate/>

Examples of Artificial Intelligence in the Travel Industry

The role of artificial intelligence in the business world has grown dramatically over the last decade, with much more widespread adoption in the travel industry in recent years. Three of the most significant ways the technology is currently being deployed are listed below.

□ Online Customer Service and Chatbots

One of the most exciting applications of artificial intelligence for hotels and other tourism businesses is providing online assistance to customers. There has already been widespread adoption of power chatbots on social media platforms and instant messaging apps, in particular.

When used in this manner, artificial intelligence can respond to questions and provide valuable information to customers even when a customer service representative is unavailable. Customers are demanding faster and faster response times on online platforms, and artificial intelligence enables businesses to meet these demands in ways that humans cannot.

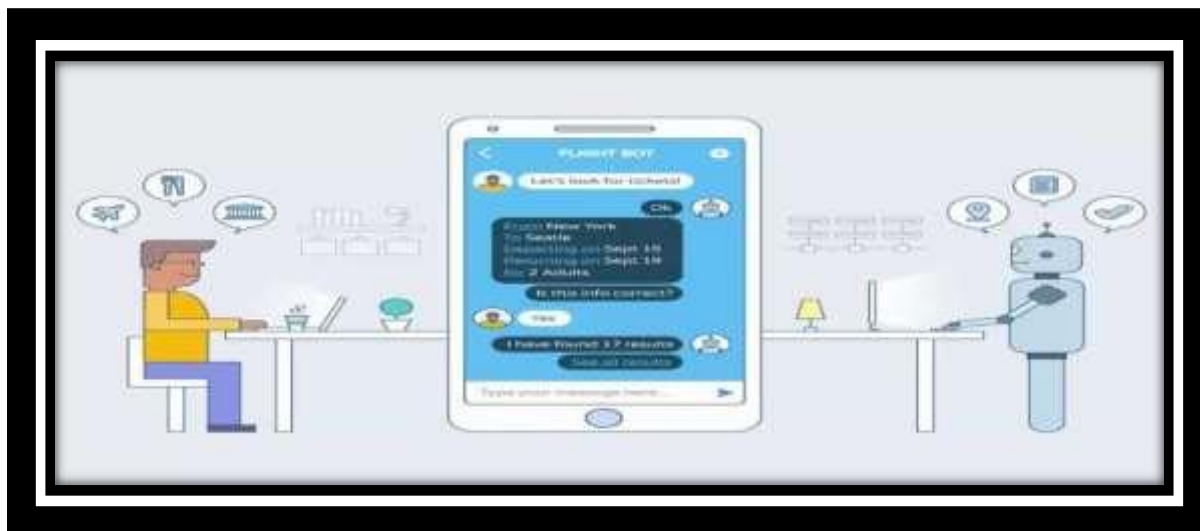


Figure 3 <https://www.ecommerce-nation.com/chatbots-advantages-and-disadvantages-of-these-tools/>

□ Customer Service in Person

While artificial intelligence is increasingly being used to power online customer service, one emerging trend is for the technology to be used for face-to-face customer service interactions as well. Importantly, this has the potential to reduce wait times at information or reception desks while also improving overall efficiency.

The artificial intelligence robot 'Connie,' which has been deployed by Hilton, is one example of this technology in action. This robot provides tourist information to customers who speak to it using artificial intelligence and speech recognition. Each human interaction also contributes to the robot's learning, which improves the quality of all future communications.

□ Processing and analysis of the data

Finally, it is critical to understand that the applications of artificial intelligence in the travel and tourism industry go beyond customer service. One of its most popular and effective applications is data collection and interpretation to conclude customers, business practices, and pricing strategies.

The key advantage of artificial intelligence in this field is its ability to sort through massive amounts of data quickly and accurately, whereas humans would take much longer and potentially contain more errors. The Dorchester Collection hotel, for example, has used artificial intelligence to sort through customer feedback from surveys, reviews, and online polls in real-time to build a more accurate picture of current opinion.

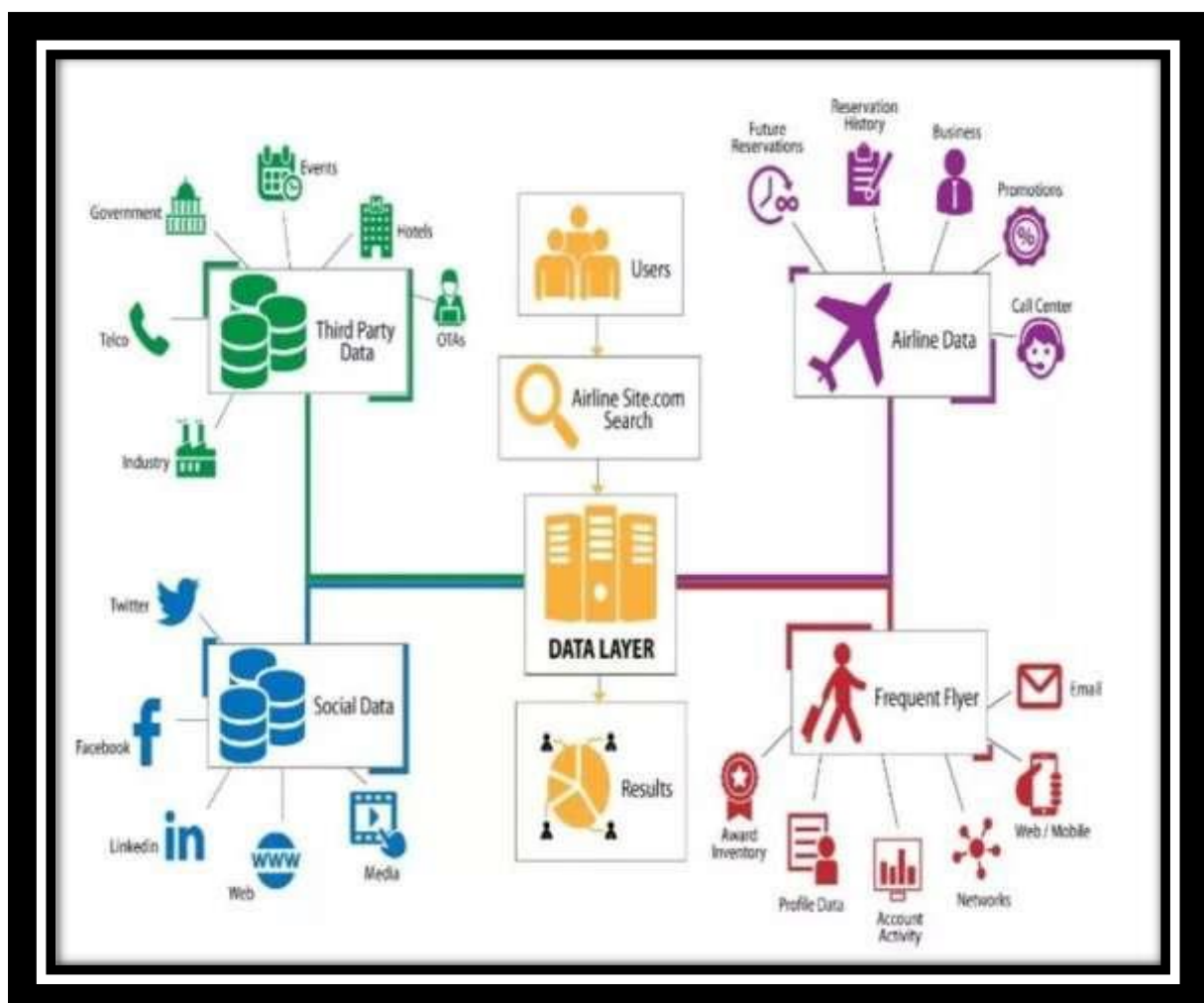


Figure 4 <https://djangostars.com/blog/benefits-of-the-use-of-machine-learning-and-ai-in-the-travel-industry/>

The Role of Artificial Intelligence in Improving the Quality of Tourism and Hospitality Services

Hotel service quality is critical for gaining a competitive advantage in terms of satisfying customers and spreading positive word of mouth offline and online. The service

quality gap model compares the customer's perception to his expectation, and the excess perception score is treated as a Positive Gap in Service Quality (Parasuraman et. al.1985, 1988, 1991).

AI-enabled applications in hotels will have the following positive effects on customer perceptions of five Service Quality dimensions

□ Recommendation Platforms

It is perhaps the most common Data Science application case. A powerful recommendation algorithm that learns even more from a user's online behaviour to offer more personalised and valuable suggestions can be built with minimal data on typical searches or preferred offers.

□ Intelligent Travel Assistants

"Bots" or "chatbots" are smart programmes that have been trained to perform a specific task upon a user's request. People seek solace in their daily activities. As a result, intelligent concierge services powered by artificial intelligence (AI) are gaining traction in the travel industry. One of the highly automated areas that use algorithms is trip booking.

□ Revenue Management Software

Revenue managers determine the best room rate at any given time to maximise bookings and revenue. With the advent of new online travel agencies and websites, this task has become impossible to complete manually due to the massive amounts of data produced daily. Revenue Management Systems (RMS) collect and compute large amounts of complex data in real-time, then run it through models to produce easily understood insight and the best possible room rate. A properly trained system can also effectively sift through the signals detected from market variables, discover patterns and anomalies, and then use that information to forecast guest arrivals and calculate the best prices as the market changes.

□ Segmentation of the Market

Market segmentation is not a new concept, and it has been used successfully in the past. However, thanks to the power of new technologies, we can now do more than simply categorise guests into large segments, such as family vacationers or business travellers. Machine Learning can be used to compute dynamic clusters of guest types that are fluid and change in real time using market segmentation techniques. This new data can be processed automatically by a Machine Learning system to update things in real-time, ensuring that your segments are always valid and up to date.

□ Customer Satisfaction

A good customer experience must be one of the top priorities of any business, but it could be argued that none is more prevalent than in the hospitality industry. A comprehensive knowledge base can assist in tailoring a guest's experience to them in ways that Machine Learning cannot. One of the primary ways that Machine Learning and Artificial Intelligence solutions can help create a more unique and appealing customer experience is in addition to customer experience enhancements.

□ Management of Operations

According to the International Air Transport Association (IATA), 7.2 billion passengers will be in transit by 2035. Maintaining smooth operations will be difficult with such a large number of passengers. Flight turnaround activities would necessitate the use of a smart and intelligent system to monitor and assess potential departure delays.

- Passenger flow can be predicted using predictive analytics and machine learning to avoid airport overcrowding.
- ML can be used to assess the risk of delayed departures based on current operational conditions as well as previous data and patterns.
- Machine learning capabilities can be used to create a virtual assistant that will proactively track baggage by learning common baggage mishandling and breaking points, situations, and environments.

□ Accommodation Services

Artificial Intelligence and machine learning can be used to integrate real-time feedback into workflows. This can influence a guest's satisfaction with their room. If guests are dissatisfied, they may be allowed to move to another room.

- Artificial Intelligence can monitor amenity maintenance schedules. Stay conditions (temperature), requests (clothing/shuttle service to the airport), and complaints
- Guests can read the news, check the weather, and maps, and more using an AI-powered smart mirror.

□ Assistance from Hotel Employees

Hotel employees, such as those in Concierge, Housekeeping, and the Front-Desk, have direct contact with guests. These employees make use of the Point of Sale (POS) and Property Management System (PMS), which allow artificial intelligence to reveal the next level of guest service. The POS and PMS integration provides real-time booking, confirmation, and tracking. Artificial intelligence can make real-time recommendations by tracking spending patterns and analysing guest preferences.

□ Corporate - Revenue accounting and back-office automation

Robotic Process Automation (RPA) is a key tool in back-office automation that can perform tasks that would otherwise be performed by humans.

RPA can automate routine and repetitive tasks.

- Artificial Intelligence can detect demand patterns, forecast related prices, and even plan human resource requirements.
- Machine learning and algorithms can automate invoice categorization. Otherwise, an accountant would have to perform the task manually. Financial reconciliation can be automated as well.

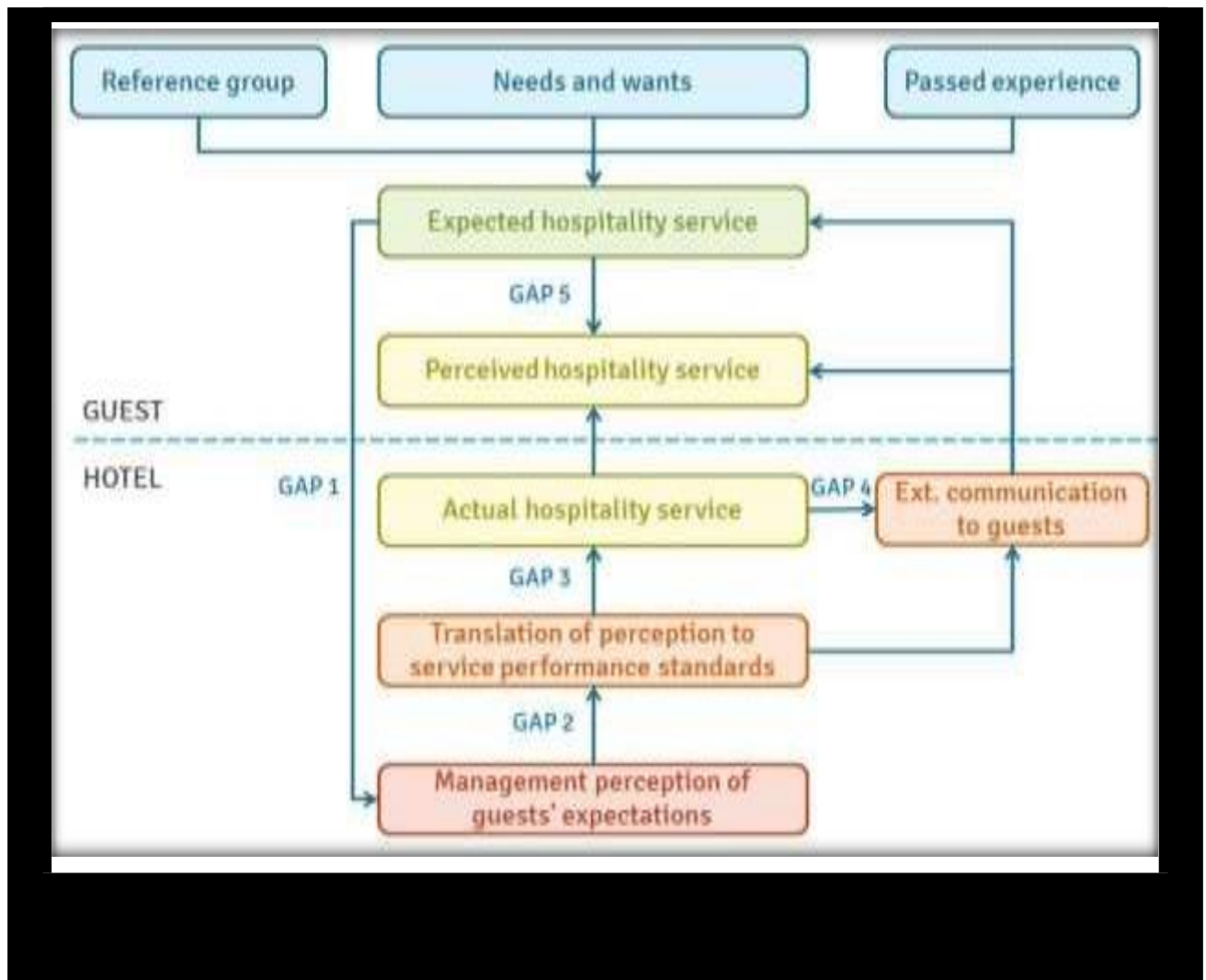


Figure 5 https://ceopedia.org/index.php/File:Hospitality_product_quality.png

LIMITATIONS

This study provides an overview of the use of artificial intelligence in the hotel industry; however, an empirical assessment of the impact of artificial intelligence applications on hotel service quality is required.

FINDINGS

- Artificial intelligence provides guests with the easiest mode of services in the hospitality sector.
- Artificial intelligence gives more comfort zone to the guest.
- Due to artificial intelligence hospitality industry can give a more luxurious life to the guest.

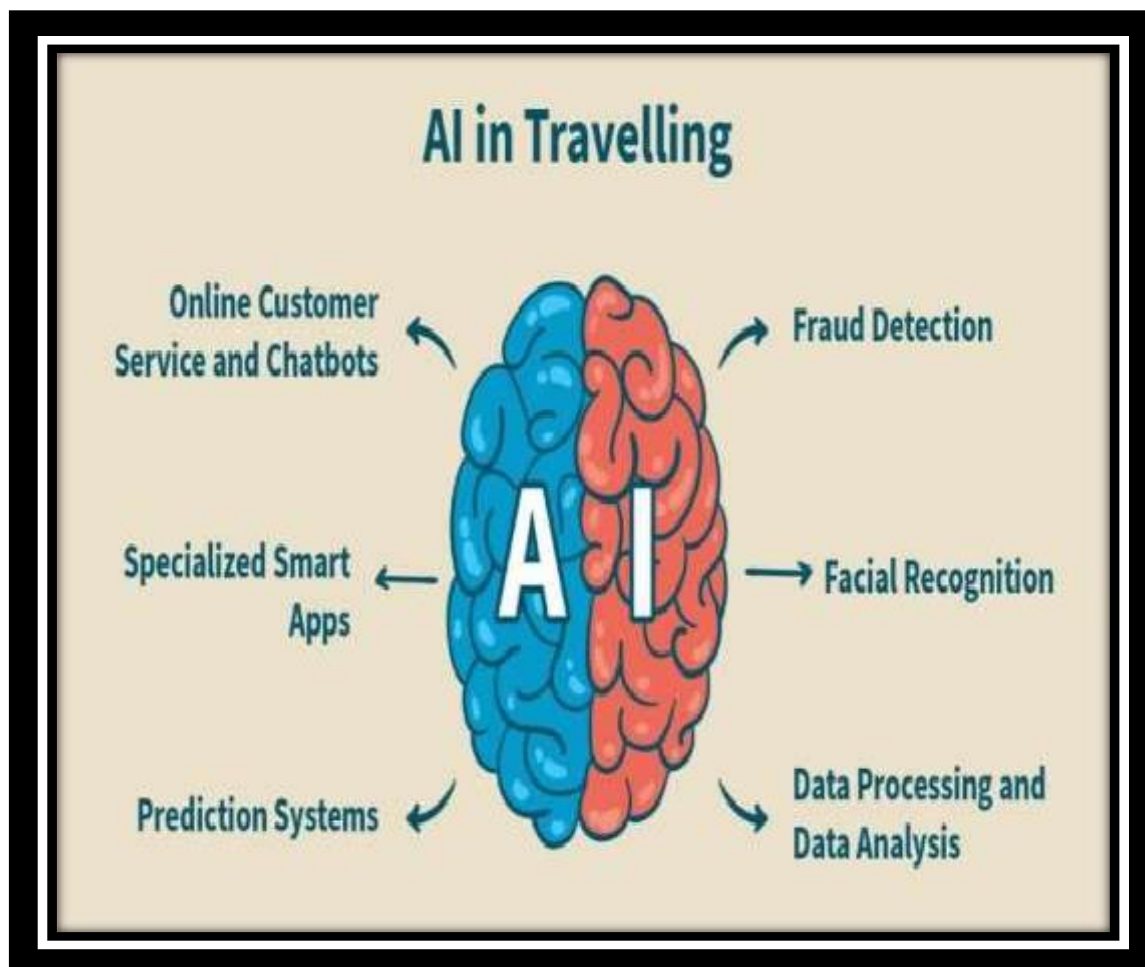


Figure 6 <https://www.qulix.com/about/ai-for-tourists-part-1/>

PERSPECTIVES FOR THE FUTURE

Artificial Intelligence and its applications, particularly through automation and robotics, are playing an increasing number of roles and represent the future of the T&H industry (Tussyadiah, 2020, Tussyadiah et al., 2020). Its various applications reflect the field's emerging and widespread use of AI. The advancement of artificial intelligence has an impact on both T&H companies and tourists. The integration of artificial intelligence in T&H is progressing and will become omnipresent in all stages of a traveller's journey in the coming years.

CONCLUSIONS

Artificial Intelligence has enormous potential. Enterprises are shifting away from rote, rules-based automated solutions like Chatbots and toward intelligent cognitive agents that process unstructured data, engage in more human-like interactions, and learn on the fly. The

The travel and Hospitality industry can ensure personalised service by combining artificial intelligence with advanced analytics principles, resulting in a better value and memorable experience for their guests.

With its ability to streamline processes, provide valuable insights, and optimise guest experiences, artificial intelligence is changing the traditional view of hotel services. It is propelling a new wave of innovative, responsive, and guest-centric hospitality to improve service quality and the overall development of the hotel industry. Hotel guests who are unaware of artificial intelligence or do not have immediate plans for artificial intelligence must collect and save data that can be transformed into a competitive advantage; shortly, the saved data will turn into a very rich source of valuable revenue. There is no doubt that machines learning and collaborating with humans will ensure quality hospitality, elevating artificial intelligence beyond a mere buzzword.

Based on this research, we can conclude that this type of artificial intelligence is beneficial to the hotel industry and makes our guests more comfortable and at ease when using hotel services. As far as the hospitality industry is concerned, we provide the maximum comfort zone to the customer, and this artificial intelligence will make the customer more comfortable. Technology has launched various Smart Phones that allow you to connect to the world and start various businesses from home, which has an impact on globalisation. With so much pressure to compete and quickly capture a large customer base, hotels worldwide will need significant technological innovations to keep up with rising demand.

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