

## Emerging Use of Artificial Intelligence, Robots & Service Automation in Hotel Industry

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### Abstract

*Today is the era of Artificial Intelligence, robots and service automation. They are becoming apparent in our daily lives as well as economic landscapes. Artificial Intelligence, robots and service automation have already made a mark across different industries and so is the hotel business which is quickly matching up with this drift. While the hotel industry is facing a cut throat competition situation, innovation is one of the key elements for hoteliers to beat this competition. In the hotel industry, AI is contributing in transforming the sector in ways so as to provide more effective and faster processes and service delivery. Hoteliers are utilising technologies such as Artificial Intelligence, Robotics and Service Automation to develop new methods to reach out to perspective and existing guests, know them better, and serve them to earn their faith and trust. With the modern era guest being spoiled for choice, Artificial Intelligence, Robotics and Service Automation make it easy for hoteliers to offer personalized services. Artificial Intelligence has also provided various advancements in providing comfortable environment to the guests who have made the hotel industry much more sophisticated than ever before and resulted in achieving higher number of satisfied and repeated clientele. The literature on Artificial Intelligence, Robotics and Service Automation is a scarce but expanding field of research. This study illustrates the emerging trends in using the Artificial Intelligence and Service Automation in various operational domains and areas of the hotel so as to achieve a better guest satisfaction and greater brand royalty. With the help of this paper the author wants to discuss the various ways of implementation of Artificial Intelligence, Robotics and Service Automation which are trending in the hotel industry and also to emphasize on challenges being faced while implementing these technologies.*

**Key Words:** Artificial Intelligence, Service Automation, Hotel industry, customer experience, challenges.

### Introduction

Artificial Intelligence has already made its presence in almost every business and the hospitality industry is also not the exception. The industry is catching up fast with this trend. Due to tight competition and overcrowded market, the hoteliers are seeing innovation and technology as the key element to stay ahead of competition.

With the industrial revolution, the service industry got the opportunities to adopt technological advancement as well as service automation in their operations (Collier, 1983). The development in the Information and Communication technology results in constant growth and elevation in service delivery which in turns brings greater guest experience and satisfaction (Law, Buhalis, & Cobanoglu, 2014).

The day by day advancement in the technology has made a great impact on hotel industry by providing a path for the adoption of Artificial Intelligence, Robotics & Service Automation in the operations of Hotel.

Technologies such as Artificial Intelligence, Robotics & Service Automation are essential to maintain a continuous improvement and to generate more revenues. Hoteliers are already striving for new methods to reach out to perspective and existing guests, know them better, and serve them to earn their faith and trust. With the modern era guest being spoiled for choice, Artificial Intelligence, Robotics & Service Automation makes it easy for hoteliers to offer personalized services and brand their property as a **“Smart Hotel.”**

But, at first, let's know what exactly Artificial Intelligence is in layman's term. The definition of Artificial Intelligence as per Wikipedia is:

“Artificial Intelligence (AI) is the ability of a computer program or machine to think and learn.”

Although the term seems glossy and contemporary, but the concept of artificial intelligence is not a new one at all. As a matter of fact, it existed as early as the 1950s but in recent years technology has developed to that level where AI is being incorporated in various business and household tasks.

Artificial Intelligence is associated with automation and these days, the technology is being used to perform a varied range of activities and services. But still some industries exist which are rigid to incorporate the trending concept of Artificial Intelligence into their routine operations because of the fear that it might hinder their natural course of development.

However, the scene is completely opposite as far as the hotel industry is concerned. Hotels all over the world have realized the value of using modern digital technology so as to drive uninterrupted and constant growth & revenue.

The motive of this study is to identify the domains and areas where Artificial Intelligence, Robotics & Service Automation are being utilized in hotel operations. The study also concentrates on the importance of Artificial Intelligence and service automation in enhancing the service quality and guest staying experience in hotels.

### **Objectives of the study**

This study has been pursued with the following objectives:

- To understand the adoption of Artificial Intelligence, Robotics and Service Automation practices in hotel industry
- To explore the influence of Artificial Intelligence, Robotics and Service Automation on service quality and guest experience.
- To study the challenges of acceptance and implementation Artificial Intelligence, Robotics and Service Automation by both guests as well as hotels.

### **Research Methodology**

This study is a descriptive study which is based on secondary data. The various secondary sources used for the study includes articles, journals and reports.

### **Automation & Technology in Hotel industry**

According to technology experts, innovative technologies of the era, such as, Robotics, Artificial Intelligence, Service Automation, mobility, etc. generates revenue generation potential for hotels. This is being achieved just because of the reason that these technologies are focusing on giving the best ever possible experience to their patrons. Ultimately this will lead to achieve repeat clientele. These days, automated check-in counters at hotels are prevailing which are allowing the front-desk employee to focus more on other important tasks. Hotels are adopting mobile based applications for check-in kiosks, offering guests everything from ordering their meal for lunch/dinner to a quick scan of local activities and amenities without leaving the room rendering a wonderful in-room experience. These features are predominantly catalysts to delighting the **millennial customer base**.

In the hotel industry, AI is contributing in transforming the sector in ways so as to provide more effective and faster processes and service delivery.

Artificial Intelligence has also provided various advancements in providing comfortable environment to the guests which have made the hotel industry much more sophisticated than ever before and resulted in achieving higher number of satisfied and repeated clientele.

Self service kiosks are the most common automated system which are being used by various hotels to facilitate guests in self checking in and self checking out. These type of kiosks are generally installed in the hotel lobby and are accessible by hotel guests with the help of their name or reservation number or any other reference key code issued by the hotel at the time of reservation.

A few years ago, Hilton Worldwide started services like digital check in and room selection to all of its hotels. This digital platform not only allows the guest to check in and select their room from the available digital plan but also give them a opportunity to customise their services like room upgradation, making special request, ordering room service in advance etc.

The hotel industry is getting the benefits from the huge database and its analysis. For example hotels can plan and customize their marketing strategies keeping in mind spending habits of their repeat guests. This would also help the management in getting better understanding of the guest requirements and expectations and hence in improving in service quality. The improved guest satisfaction will lead to greater profitability. With the help this data analysis the hotels may predict the peak, lean or optimal business season taking into consideration the events, weather and other considerable factors.

Due to its tendency to perform traditional human functions practically at any minute of the day, hotels of the future are going to save significant amounts of money, to eliminate avoidable errors and deliver the best possible service.

Service Automation and Artificial Intelligence are being utilised in the industry in the following ways and in future, the scope is just going to balloon further:

#### **Automated & Robotics Concierge Service**

In the today's modern era as the guests are becoming more and more tech friendly. With the enhanced usage of text, messages and chats, the demand for such automated and robotics concierge services is also rising high. The hotels are synchronizing the guest history or records with the automated systems which enables them to offer virtual assistance with the help of mobile services. Marriott Hotels have introduced a special app which provides 24 hrs concierge service to the guests, wherein they can order any amenities or services and even text to get any recommendations. Restaurants are using table side digital ordering (Hill, 2015) with the help of touch screen tables like Microsoft Pixel Sense (Aamothe, 2014). Introduction of robots for various services is also becoming popular trend to attract guest and improve service quality. Hilton is the pioneer in utilizing robotic services as concierge. Connie the concierge robot of Hilton offers suggestions and tips on attractions, activities, events, dining outlets etc to guests. Connie also learns from each interaction therefore constantly improves the knowledge and service it can impart. Robots are being used to deliver guest supplies such as water, towels, shaving kits etc. in the guest rooms, provides food and beverage as per orders placed for room service and may also used by housekeeping for vacuum cleaning guest rooms..

#### **Artificial Intelligence enables guest services**

The Artificial Intelligence has reached almost every gamut of the world. The reputed brands of hotels are utilizing AI for guest services to increase conversion, guest engagement and personalize the guest experience. The hotel management integrates the Artificial Intelligence technology with the existing Property Management System so as to inform the guest about availability of various services, opening and closing timings of food & beverage outlets and other guest facilities, housekeeping schedule, prevailing offers and any other real time alerts. Hotel guests utilize this AI enabled service from their mobile and related apps to order room service, use valet facility or gather local information. With the evolution of Artificial Intelligence, hotels are offering mobile and voice activated assistants which provide a guest an easy and interesting way to interact with hotel. Just using the voice command, guest can control lighting, heating and air conditioning, TV, music etc. They can order room service with their voice command as well. Digital room assistants and wall displays with touch screen interfaces are amongst those which are prevailing these days. The AI enables systems and services improve their performance with the collection of data and learn and update more and more about guest likes, dislikes, wants and preferences.

### **Information through Chatbots**

In the upcoming trends the service automation Chatbots have gathered great importance and attention due to their ability to disseminate accurate information on time. Simply saying they are the automation based services which can mimic the way humans interact (Abu, 2007). Chatbots can handle thousands of visitors at once. Hotels are offering such messaging service to their guests from their website, some giving through their own apps and rest are utilizing third party messaging channels like Facebook Messengers, Whatsapp, Wechat, Google Assistant etc. With the help of Chatbots guest gets 24/7 on demand and customized information in a natural and conversational way. The programming of Chatbots is done keeping in mind that they can converse with guest in their language. This service reduced the chances of losing a guest during the booking journey to considerable extent. As all the basic queries are answered by Chatbots but in case it is unable to answer the particular question, it may be rerouted to a human member. Even if a guest prefers to speak to a real person, then the Chatbot will connect him the concerned staff. Due to these numerous advantages, many hotel chains and brands are utilizing Chatbots to redefine and enhance their guest experience. The top examples of Chatbots are GReaTa Chatbot by GRT hotels, Botlr by Marriott International, Rose by Cosmopolitan of Las Vegas, Mercure Bot by Accor Hotels, Edward by Radisson Blu, Mario by Marriott etc. This automation technology is definitely winning over reaped calls over a phone and automated emails.

### **IoT (Internet of Things)**

The internet of Things is the network of physical devices, appliances, and other items which are embedded with sensors, electronic, software and connectivity due to which these connect with each other and exchange data and also results in less human exertions. Internet of Things in Hotels means reduced costs and an optimized guest experience along with the seamless hospitality and luxurious stay. Hotels started using self service kiosks which enables guest to check in and checkout automatically without the intervention of front desk staff. (Kim & Qu, 2014). The further improvement in the said service was made by allowing the guests to checkin and checkout using mobile phones. (e.g., Berezina, 2015; City center Land, LLC, 2017; Hilton Honors, 2017; Marriott International, Inc., 2016; MGM Resorts International, 2017).

With the help of IoT, hoteliers are achieving guest personalization, much more easily. When implemented with proper planning and strategy guests can control minor things such as lighting or air conditioning of their rooms to major things including entry to their rooms, access to amenities like pool, spa and other hotel services, through their smart phones. This interconnection also helps the management to understand the guest preferences and provide better services. In case of re visit by the guest, the hotel may utilize the database to provide customized and improvised services. The hotel staff can make sure that the guest preferences are better taken care of even before the guest arrives and demands.

Guests also feel more comfortable on the usage of android based applications from their own mobile and experience an accurate and faster service when compared to the service rendered by the front office staff. Along with this, service automation makes staff available for other important activities and provides more time for interaction with guests so as to provide a memorable stay to them.

### **Virtual and Augmented Reality**

The hotel industry is all set to deliver a unique and memorable experience with the help of the biggest emerging technology trend i.e. Virtual Reality and Augmented Reality. Virtual Reality is computer technology, which uses images, sounds and physical sensation to make the guest feel as if they are physically present in a virtual world. Augmented reality makes use of computer technology to change the perceptions of a person in relation to their physical surroundings. Virtual Reality and Augmented Reality are generally referred as siblings.

Hotels are using Virtual Reality and Augmented Reality technology as a marketing tool to target the perspective guests. Instead of giving pamphlets or material showing descriptions, it offers the perspective guests, a chance to experience things for themselves. In short this technology may allow a perspective guest to experience a virtual creation of a room with in a hotel or take a look at nearby sightseeing or attraction.

There are many hotels which are taking advantage of Augmented or virtual reality to provide an enjoyable and unique hotel experience to its guests. Example can be taken of Holiday Inn which is allowing guests to see the realistic virtual depictions of their favorite celebrities in the hotel just by pointing their smart phones. This has become possible with the use of Augmented Reality. Best Western has also utilized Augmented Reality in a unique way by allowing kids to see themselves alongside the Disney stars. Many hotels have utilized Augmented and virtual reality apps to provide a facility of virtually recreating the environment and surrounding.

### **Challenges in adopting Artificial Intelligence and Service Automation**

It is true that adoption of Artificial Intelligence and Service Automation in hotel industry offers lots of benefits but it also brings challenges too. The level of service and extent to which these technologies can be used in the hotels will greatly influenced by the cultural characteristics of the guests as well as service providers (Lee et al, 2013).

### **Compatibility of Devices**

When we talk about the challenges in adopting any technology, the Interoperability among device will be on top (Michael, 2017). Interoperability is the ability of computer based technology or software or systems to exchange and make use of information. So it becomes a big challenge for the industry to provide interoperable devices.

### **Installation Cost**

The initial cost of installing the Artificial Intelligence and service Automation service is high. It requires lot of capital investment starting from the planning stage till the final execution and installation of service ( Ivanov, 2017). The maintenance cost is also on a higher side.

### **Lack of human personal touch**

There is no doubt that Artificial Intelligence has entered in the traditional hospitality industry with a promise to enhance hotel brand value, reputation, drive revenue and take guest experience to the next level. But this is also reality that it lacks human touch. Still there are guests who like to interact with human staff and front desk and want to be welcomed with smile (Ivanov, 2018). Artificial Intelligence and Service automation might have made service fast, effective and memorable but it gets fail in the situations where it requires emotional handling, personalization and professionalism.

### **Data Privacy & Security**

The effectiveness of the AI based services depends on huge volumes of data to learn and make intelligent decisions. This AI based system feasts on data that is often sensitive and personal in nature which makes it vulnerable to serious issue like data breach and identity theft. Various service automation systems need fingerprints or facial scan or retina scan for recognition so as to provide the guest access to rooms. It becomes difficult to convince privacy conscious guests who might feel the risk of data loss or misuse.

### **Conclusion**

With so much pressure to beat cut throat competition and enhance guest experience and satisfaction, hotel industry all over the world have realized the importance and benefits of Artificial Intelligence, Robots & Service Automation. Hotels are adopting innovative fusion of Artificial Intelligence (AI), Internet of Things (IoT), Big Data, Machine Learning and service automation to transform their space and redefine their existing service standards. Such usage of technology will be the key to enhance guest experience, increase brand recognition and loyalty. It is very evident that integration of Artificial Intelligence and Service Automation in hotel industry will see a fundamental redefinition of an exceptional guest experience. (Ivanov, 2017)

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