



USING ROBOTIZATION AND AUTOMATIZATION TO ACHIEVE COMPETITIVE ADVANTAGE IN THE HOSPITALITY INDUSTRY

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Abstract:

The tourism industry has become one of the most important components in the service sector. The number of arrivals in international tourism recorded continuous growth (excluding the period of the COVID-19 pandemic that started in March 2020), which caused further tightening of competition. On the other hand, tourists are more demanding, experienced, and educated and demand adequate accommodation. The question for hospitality businesses is how to compete in the market; precisely because of this, adapting to the wishes and needs of guests has become more critical than ever in current market conditions. Considering the increasing presence of technology in our lives, as well as its numerous advantages, the use in hospitality businesses of modern technological solutions, such as robotization and automation, is one way these businesses can adapt, which is the subject of this work. We present how the implementation of service automation in different hospitality industry sectors can positively and negatively influence the services. We explain how specific processes in the hotel and restaurant industries can be automated and what benefits they bring to guests and businesses. In addition, we list the potential problems that hospitality businesses and guests can encounter after this type of technology is implemented.

Keywords:

competitiveness, service automation, technology, hotel, robotization.

INTRODUCTION

With the emergence of the Fourth Industrial Revolution, automation has become more important in all aspects of our lives and our businesses. Today's technology makes it possible to accomplish more things in a given amount of time with less work, allowing us to refocus on anything more interesting and calling for creativity and extra effort. Even if it seems like we have ever less of it, we increasingly value our free time. This does not imply that time is the only factor to consider when selecting goods or services; for example, delivering a product in record time but with flaws will not impress the consumer. Due to the aforementioned, market conditions have influenced how technology is used in business and how it is constantly improving. Automated technology was initially mainly applied to industry and the production of tangible goods. The ability to produce a large number of goods with the same features, increase the production volume, and reduce the cost per unit produced was made possible by automating production processes.

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Similarly, automation is crucial for the tourism and hospitality industry. Businesses have started using robotization and automatization of services to better serve guest demands and gain a competitive advantage in the market. The main benefit of technology for consumers (guests) is the ability to receive the same service more quickly, for a lower price, and with much less effort (Ayyildiz *et al.*, 2022). Today's tourists use robotization and automation of services at each stage of their trip: before travel, at check-in, during their stay, at check-out, and after checking out (Lukanova & Ilieva, 2019). An example of this is the ability to use a kiosk at an airport to register and obtain a ticket based on a reservation. Tourists can avoid crowds and save time by doing this, which can significantly affect how much they enjoy their trip. A similar solution has already been introduced in some hotel receptions. The use of robotization and automation in the hotel sector suggests a change in long-term business orientation or a shift in how services are provided. The simplicity, accessibility, and speed that service robots can offer could improve customer satisfaction, while the discomfort, fear, and worry that they can cause could make it worse (Manthiou & Klaus, 2022). Therefore, applying robotized technologies to enhance a hospitality business requires some analyses and studies; otherwise, the organization will incur substantial expenses, but perhaps with little gain, or with losses (Ivanov & Webster, 2017). The primary objective of using robots to replace human-to-human interactions is to improve guest satisfaction, employee satisfaction, and management satisfaction (Tanizaki, 2017).

METHODOLOGY

This article aims to explain how applying robotization and automatization in the hospitality industry could lead hotels to take a strategic market position. To gather data, we analyzed academic literature and research reports related to robotization and service automatization in the tourism and hospitality sectors. To fulfill this study's aim, extensive secondary data was collected from journals, conference papers, and websites. Search results were limited only to papers written in English, which leaves additional space for future research in other languages.

ROBOTIZATION AND SERVICE AUTOMATIZATION IN THE HOTEL SECTOR

Services provided by hotel business are increasingly becoming robotized and automated. In addition to personalized service, today's travelers want reliability, quality, and efficiency from the hotel sector. Therefore, robotization and automatization have found uses in the hotel and food & beverage sectors. Depending on guest participation in the service delivery process, robots can be utilized for back-of-house or front-of-house tasks. These types of technological advancement are used in the following sectors of the hotel industry:

- Reception
- Sales and marketing
- Housekeeping
- Hotel maintenance
- Hotel restaurant
- Hotel kitchen

Robotic process automation (RPA) and artificial intelligence (AI) are already present in tourism and hospitality. These are different technologies, although they share many similarities. RPA is a new technology used to automate repetitive tasks that employees perform, allowing people to work on more complex jobs that add more value to the business (Ivančić *et al.*, 2019). RPA, in contrast to physical robots, refers to the software on which virtual bots run. RPA is a visual drag-and-drop system that automates tasks such as sending invoices, providing customers with refunds, and responding to clients in a consistent manner (Huang *et al.*, 2021). Pure RPA is incredibly effective, but it only follows instructions from users or programmers, whereas AI can be self-learning. All rule-based tasks can be automated using RPA, and AI can fill in the gaps left by RPA (Automation Anywhere, 2022).



Hoteliers can save money by using RPA. This type of automation can help provide consistent customer service throughout all elements of a guest's stay by automating different tasks, such as (Kaur, 2022):

- Room reservations – RPA can help hoteliers respond to room availability inquiries and manage reservations. Software that is automated in this way can handle multiple inquiries at the same time more precisely than regular staff;
- Operations at the front desk – Routine emails, including email reservations, amendments, or cancellations, can all be taken care of at any time of day or night (Gupta, 2022);
- Check-in and check-out automation – RPA can more simply collect payment for pre-paid reservations. Processes could be sped up with the implementation of a face recognition feature together with the speech-to-text transfer;
- Room service – RPA can automate room service requests, giving staff members more time to focus on other tasks;
- Concierge duties – The robot concierge is already being used in the Hilton Worldwide and Marriot International hotel chains (Shin & Jeong, 2020);
- Analysis of customer reviews – RPA can analyze text and respond by recognizing keywords and similar sentences. Additionally, the system can send an alert to hoteliers when comments related to a particular problem are repeated more than once (Eshghi, 2022).

Additionally, RPA can help with countless repetitive, rule-based tasks that are part of some human resource management procedures, such as hiring and onboarding. RPA bots can screen CVs, conduct much of the paperwork that human resource management are responsible for, and find candidate employees more accurately and impartially than do people (Ćormarković *et al.*, 2022). Furthermore, RPA could be used in finance departments for additional revenue analysis and to provide specific recommendations.

The check-in procedure can be sped up, and more guests can be served at once using robotization and automation of services at reception. Airports were the first places where digital check-in kiosks were used, but now hotels are also using them. The guest can skip long lines at the front desk in this way, check in quickly, and receive their room key immediately. Naturally, some guests who use this registration technique for the first time may decide against it and choose the conventional approach, particularly if they require information about the hotel, the location, particular hotel services, have a specific request or have a poor experience with RPA.

The hotel's mobile application is a less complex technological solution for the guest. Through it, the guest can check in from a remote location and receive a notification when the room is ready, which allows them to enter the room as soon as they arrive at the hotel. The guest can enter special requests, pay for their stay at the hotel, get all the information they need, and get in touch with hotel staff, even remotely. Some hotel operators have taken things further by allowing customers to use a mobile app to unlock their rooms using Bluetooth technology. Because visitors carry their phones with them constantly and rarely leave them in hotel rooms, this method is more practical than having a physical key.

If similar approaches are implemented, hotel personnel will have many advantages. First, they might focus on more enjoyable and innovative tasks that frequently positively impact their motivation. In addition, they can better promote specific hotel services for which the guest would otherwise need patience to actively listen to during a lengthy check-in process.

Implementing a virtual chatbot would make the most automated commercial contribution to the marketing and sales department. The following are chatbots' key benefits (Dickinson, 2017):

- Help in encouraging guest interaction;
- Chatbots are constantly active and offer smart communication;
- They can be multilingual and able to serve guests from other countries;
- Chatbots assist in more quickly and effectively guiding users through the booking process;
- Reduce staff workload;
- Greater guest profiling to assist later in attempts to increase their loyalty.



On the other hand, it is essential to note that using a chatbot has the following drawbacks as well (Dickinson, 2017):

- They are unable to offer that human touch when it is needed.
- Language difficulties can occur;
- The best chatbots cost a lot of money.

A survey conducted in 2020 (Webster & Ivanov, 2020) revealed that guests were enthusiastic about robotization and automatization of services to be introduced in a hotel housekeeping department. The study respondents believed that robots should be responsible for bringing clean towels and bed linen, while cleaning the rooms was considered the least desirable robot activity.

The importance of artificial intelligence-based technological solutions in the maintenance division would be evident in identifying all imperfections in the hotel and prioritizing the replacement of outdated equipment. When a device's performance started to decline, the staff would receive reports providing an overview, and they would be able to intervene quickly to stop further damage and guest dissatisfaction.

We have seen that hotel restaurants have already begun to use some automated procedures. If there was a smartphone application that guests could use or if a tablet was available at each table, ordering food and drinks would be feasible. This could be the first option when the guest needs fast service and knows what they want to order. In addition, the guest would have the opportunity to learn about the ingredients of each dish and, for example, choose the level of spicing, which would also result in savings. If payment could be made using the same programs, there would be little chance of a shortfall in the cash register. Mechanical hands would be handy in a hotel kitchen to cut some delicacies and operate ovens. The deployment of technology solutions in this sector could also result in considerable benefits in terms of food temperature control, because inappropriately moving food from the refrigerator to areas with higher temperatures (a human failing) can result in a risk to guests' health.

ADVANTAGES AND DISADVANTAGES OF USING ROBOTIZATION AND AUTOMATIZATION IN THE HOSPITALITY INDUSTRY

The following are some of the key benefits of employing robotization and automation of services in the hospitality business, according to Ivanov (2019):

1. Robotization and automatization technology can operate continuously

Robots and automation can run without interruption, unlike people who have set working hours, breaks, annual vacations, sick days, and the like.

2. With new software and hardware, robotization and automatization technologies could perform a variety of tasks and broaden the spectrum for their applications

It is relatively easy to update software and enable new features, while scheduling numerous training sessions to update staff and enable them to implement new features could run for weeks or months, and would be unnecessary. The results can be immediate, given sufficient enhancement of the technological solution. The chatbot and the addition of new languages to chatbots are two examples.

3. Robotization and automatization technologies can complete their work on schedule while correctly carrying out the service scripts

There are marked instructions that must be followed by the RPA. Robot behavior follows a set of norms, which minimizes issues with adherence to policies and standards.

4. Robotization and automatization technologies can deliver consistent or improving work quality

The provision of services of comparable quality is predicated on adherence to policies and guidelines. Even if all staff receive the same training and are familiar with how things are supposed to be done, their actual services can vary significantly. If services are automated, quality variations will not exist or will not significantly impact the hotel.



5. Robotization and automatization technology can perform repetitive tasks. For people, repetitive tasks can become stressful, tiring, and boring, which affects their motivation.

A hospitality business' success is significantly influenced by employee motivation. Numerous financial and non-financial incentives have an impact on staff motivation and level of satisfaction. Because a significant percentage of their time and energy is spent performing repetitive tasks, workers with a wide range of knowledge and skills can eventually lose motivation. Worker demotivation can result from boring tasks such as sorting clothes in the cloakroom, stacking clean towels, replenishing soap, bringing guests' luggage to their rooms, putting away dishes for washing, etc.

However, there are currently some serious drawbacks when it comes to the adoption of robotization and automatization in the hospitality industry (Ivanov, 2019):

- Lack of originality

One of the most significant issues with applying this kind of technology in the hospitality business is that it needs to be based on clearly defined procedures and rules, as with RPA's service technique. Currently, robots lack the human ability to be creative, approach people personally, and be warm.

- Inability to work autonomously without human supervision

Robots operate following scripts and processes. However, human supervision is required for a sizable portion of the time. In some situations, service is necessary because a fault arises, or the guest's needs are more than can be accommodated by current technology options.

- Inability to interact personally with guests

RPA is built on exact models that have the potential to affect general guest happiness. On the other hand, the type of AI called Deep AI is still in development. This system uses its intelligence to solve complicated issues in more human-like ways by identifying emotions, beliefs, and mental processes and fully comprehending all aspects of human nature (Ćormarković *et al.*, 2022).

- Restriction to specific situations and conditions

Although following predetermined scripts and processes can provide some confidence and security, RPA does not have the flexibility to vary. AI continuously learns over time, so if it is combined with RPA, a significant portion of this drawback can be avoided. However, it is crucial to keep in mind that a group of knowledgeable and experienced employees can sometimes resolve particular difficulties and requirements much more quickly and effectively than currently used RPA/AI solutions.

- Potential antagonism toward technology on the part of both employees and guests

When employees are concerned about losing their employment or are inadequately aware of its advantages, they can fear the adoption of this technology. Furthermore, resistance might result from cultural differences, inadequate employee training, or mistrust in hotel management. Moreover, guests who value traditional hospitality could find AI-based hospitality unpleasant.

CONCLUSION AND DISCUSSION

Modern tourists today use technology at all stages of travel, and this can make the whole trip a different and better experience. Hotel guests value their free time and want all the necessary information at their disposal on time, which is of exceptional importance before and during the trip. Therefore, it is essential to enable guests to familiarize themselves with the destination and accommodation in a short period of time (using technological solutions such as chatbots and virtual reality) and to reserve and pay for services as needed.

The robotization and automatization of services in the hospitality sector can dramatically impact the guest experience. By using them, a guest can check in and out of the hotel quickly, access all information about the hotel and destination, order food, choose an amount of ingredients and take advantage of a service nearly entirely tailored to their needs. All this can be achieved with the help of intelligent software, digital kiosks, and various kinds of robots. A hotel business that uses robotization and automation, at least in part, has many advantages, including time savings, a favorable impact on sales, elimination of problems caused by personnel shortages during the off-season, etc. Through all of these benefits, hoteliers can better understand the demands of their customers, which is crucial when offering services.



However, implementing robotization and automatization in the hospitality industry is a considerable step and requires significant technological and human training investments. In this regard, market research is essential. Research requires meeting potential guests and learning about their preferences, analyzing the costs of introducing robotization and automatization, examining employee cultural differences, considering which hotel jobs could be automated, and deciding how the business will move forward. Finally, it is critical to emphasize that the main goal of robotization and automation applications should not be to replace people, key resources for all hospitality businesses, but rather, to develop ways to simplify jobs, free up employees, and provide staff with greater opportunities to engage in more rewarding work that is challenging and creative.

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