From Tech Novice to Tech Savvy – A Review on Hospitality Housekeeping

Chandana Paul[1], Dr. Saurabh Sharma[2]

[1]Research Scholar, Amity School of Hospitality, Amity university, Jaipur
[2]Professor, Manipal University Jaipur

Abstract: The hospitality industry is goingthrogh a profound change in terms of digitization, technology advancements and amenities. Each sector in hospitality industry whether its hotels, restaurants, hospitals, Multiplex etc, every sector is changing for the better with technology and digitization. The implementation of technology in hospitality industry is not new but this pandemic has acted as a catalyst in the rapid digital transformation even in the back of the house department like housekeeping Post covid there are many new practices and trends which includes sanitization, new cleaning protocols, Use of technology, Robot service, AI etc to enhance the experience of the customer and to benefit the employee's working environment.

Keywords- *Hospitality, Housekeeping, Technology, Robot, AI, customer experience*

Introduction

An average small business or start up in today's time uses latest software applications to expedite the processes and create a great experience of the customer. Hospitality industry is such a vast service industry with so many sub sectors working towards a main goal which is guest satisfaction.

Reis et al (2020)Technological advancement in hospitality industry is been growing everyday with new digital platforms related to revenue management to reputation management.

Whether its Hotels, Hospitals, Malls, Multiplex, Event management companies, Airlines, cruise business or catering management, in all these service sector digitalization or technological progresses is humungous. This pandemic has also contributed towards digitalisation in the industry.

Patil et al (2020) Housekeeping is one of the most important departments in hospitality industry which ensures that an everlasting impression on guest or customer with respect to service, cleanliness, Hygiene and sanitation, Technological readiness and technological amenities.

The Housekeeping department needs to keep up with latest trends and Covid 19 was the best example wherein the housekeeping department adapted new cleaning protocols, sanitization transition from aesthetically to clinically clean and become digitally savvy to enhance the guest experience.

Robotics and artificial intelligence are still a very new concept in hospitality housekeeping operations but this technology is been used & accepted by major hospitality brands all over the world.

Orea-Giner et al (2022) explores the emotional connect whether it's positive or negative as per the traveller's categorization with the robot service in hotels

Literature Review

El-Said & Al Hajri(2022) states that the use of robots in restaurants of muscat is increase due to the pandemic. the use of robot service in the restaurant directly influences the customer satisfaction with respect to the functionality and the momentum of service. Also, the use of robots in restaurant has decreased the chances of infection and uplifted hygiene standards.

Orea-Giner et al (2022) explores the usefulness of robot service in hotels with respect to the category of traveller and the emotion they have while interacting or using the services of the robot. The emotional connect whether its positive or negative as per the traveller's categorization is studied and highlighted in this paper.

Parvez et al (2022) highlights that the profound change in service industry due to digitization is mainly due to pandemic. The sue of robots, AI, Chatbots is gaining popularity among the customers due to better experience, authentic information & speed of service. However, the use of AI is particularly is a challenge for the employees due to the increased risk of perceptive unemployment.

Samala et al (2022) stated that AI is the need of this hour for the tourism and travel industry. AI, virtual reality, chatbots, robots are beneficial for creating WOW experience for guest. the travellers want to experience the

usefulness of the digitization in many ways. However, the AI might have adverse implications as this will restrict the human touch and it might lead to different challenges

Yang et al (2021) examines the travellers' intention to stay in smart hotels because of two main factors Technological readiness and technological amenities through TAM model. A has more effect on the guest staying in smart hotel then TA.

Mercan et al (2021) has stated in the study that IoT is taking over as the standard technology in all fields since it provides so many chances for individualised and customised service. This article discussed recent advancements, concepts, and future IoT applications in several hospitality industries. The cruise ship business, as well as all other hospitality-related industries like hotels and amusement parks, have started to profit from this development. There is still a lot of opportunity for development and application of this technology, even if there are examples and implementations all over the world. The ways in which services are provided in terms of standard operating procedures as well as the ways in which experiences are facilitated (such as co-creation) will continue to change the servicescape in terms of customers as it continues to be incorporated into all facets of the hospitality industry.

Shin & Kang (2020) has mentioned in the study that Technology innovation is predicted to be crucial in the hotel industry's recovery from the 2020 coronavirus pandemic as a crucial risk-reduction technique. Its effect on how customers make decisions, nevertheless, is unknown. This study investigates the effects of expected interaction and expected cleanliness on perceived health risk and hotel booking intention while focusing on technological innovation for reducing visitor interaction with personnel and boosting cleanliness. Online consumer samples were used in three experimental experiments.

Patil et al (2020) has stated that by implementing cutting-edge trends & practises, the hotel housekeeping crew plays a crucial part in ensuring that visitors have a wonderful experience. In this cutthroat hospitality business, these trends and techniques assist hotels in carving out a position for themselves. It is essential to think unconventionally and use creative techniques that will help the hotel move toward resource sustainability in this period of high operational costs. The housekeeping department must change its focus from cleaning hotel spaces to contributing significantly to guests' comfort. Innovative trends and practises in hotel housekeeping are a result of competitiveness in the market, shifting customer needs and tastes, as well as technological innovation. There is use of a range of green product and supply categories. significant creative themes identified in clean floors, design trends, amenity trends, process trends, digitalization of operations, outsourcing of skilled labour, total quality management, etc. are some examples of housekeeping department trends.

Reis et al (2020)has highlighted in the study that with the help of technical advancements in Big Data, Robotics, and Artificial Intelligence (AI), which have created new research opportunities, services are evolving at an astounding rate. Our goal is to (a) advance knowledge by examining the benefits and drawbacks of using service robots in the hospitality sector and (b) advance practise by outlining the technological and architectural features of a fully automated plant based on an appropriate instance. This article employs a systematic literature review to characterise the unit of analysis, evaluate the state-of-the-art, and identify new research directions in order to accomplish this goal. The findings show that because of their mechanical and analytical nature, service robots typically do standardised jobs better than humans in high consumer contact scenarios.

Jiang & Wen (2020) has highlighted the effect of COVID-19 on Hospitality Marketing. This paper studies the three measurements – Artificial Intelligence (AI) and advanced mechanics, cleanliness and sanitation and wellbeing and medical services.

Webster & Ivanov (2020) has studied in this article that tourism will develop in a robotic economy in the future (aka robonomics). Robotics, artificial intelligence, and automation technologies will be widely used, resulting in the emergence of an economy that will be qualitatively different from the one we currently have. The form of labour, level and sources of income, leisure time, politics, international trade and relations, ownership rights, etc. will all be significantly impacted by the robonomic economy, creating significant social, economic, and political issues and stress. In-depth discussion of the positive and negative effects of economics on tourism and vice versa is provided in this study.

Yu (2020)The goal of this study is to ascertain public perceptions of robots working as front-line hotel personnel based on online evaluations from YouTube. In this study, the two most popular videos about using robots in hotels were subjected to data mining algorithms. Based on the Godspeed dimensions, a thematic analysis of the content was done. The results indicate that when it comes to any discussion about humanlike robots, potential

consumers' perceptions tend to be negative. People, on the other hand, are more accepting of animated robots. Last but not least, this study adds to the theoretical and practical discussions of robots and the analyses that go along with them.

Teng (2019) mention that there aren't many studies, though, looking at how employees' jobs shape their customer service practises. In order to better understand the mediating role of job passion, this study will examine the impact of job crafting on customer service behaviours. Data from a survey of 518 hotel employees show that harmonious passion and job crafting are positively correlated. Harmonious passion is favourably correlated with both extra-role and role-prescribed service activities. Positive extra-role service behaviours are linked to obsessive passion. Additionally, the relationship between work crafting and customer service behaviours is mediated by harmonious passion. The current understanding of work crafting is expanded in this study, which also looks at the relationships between job crafting, job passion, and customer

Ivanov et al (2019) The report outlined a wide range of tourism and hospitality sector applications for robots. In order to ensure that robots and employees may enhance the service experiences (co-)created inside it, service providers must carefully consider how robots affect the servicescape and how it has to be altered or re-imagined. The research domains listed in the report are "Human," "Robot," "Robot manufacturer," "Travel/tourism/hospitality company," "Servicescape," "External environment," and "Education, training, and research." Robots at restaurants, airports, hotels, and bars are the subject of the majority of study studies.

Buhalis & Leung (2018) has reviewed that the Internet and cloud computing have transformed how businesses function. Standardized web-based apps make data exchange easier, enabling interconnection and interoperability between internal applications and business partners' systems. In this study, future smart and flexible hospitality businesses are conceptualised, and a smart hospitality ecosystem is suggested that benefits all stakeholders.

Huang & Rust (2018) has examined that Artificial intelligence (AI) is altering services by taking on a variety of duties; while this technology is a significant source of innovation, it also poses a threat to human occupations. In order to deal with this conflicting influence, we create a theory of AI job replacement. The idea identifies the four intelligences—mechanical, analytical, intuitive, and empathetic—necessary for service jobs and outlines how businesses should choose between humans and technology to complete those duties. AI is evolving in a predictable order, with mechanical intelligence generally coming before analytical, followed by intuitive intelligence, and then emotional intelligence.

Dautenhahn (2007) Robotics and artificial intelligence have only recently begun to explore social intelligence in robots. This project's goal is to create societal norms for comfortable and sociable robot behaviour (a "robotiquette") that is accepted by humans. Second, the topic of robots as potential educational or therapeutic toys for kids with autism is brought up. In human-child interactions, the idea of interactive emergence is emphasised. The many forms of play that kids engage in are addressed in light of prospective human-robot experimentation. The final section of the study looks at various models for the "social connections" between people and robots.

Objectives of the study

- To Examine the concept of Tech Savvy housekeeping in Hospitality industry in more substantial manner
- To analyse the operational implication of technology in hospitality Housekeeping.
- To appraise the significance of Digitization in hospitality housekeeping.
- To Identify the benefits of Technology in housekeeping

Research Methodology

This study is based on review of literature using secondary data collected from comprehensive literature and other published materials, Research papers from journals, Websites, Internet sources, govt. and non-govt. publications, Articles to develop a solid theoretical foundation based on empirical evidence.

This Study has a theoretical review of Secondary data to provide a conceptual framework towards the concept of adopting digitization in Hospitality Housekeeping.

Digital Housekeeping

Housekeeping department is still making its way to the Realm of digitization. Digital transformation has existed ever since the World Wide Web's birth. However, the hotel and tourism industries have played the game of traditional agencies for the past 20 years. Some people still like the outdated procedure for requesting information from the agency, which only gives it to clients who physically visit the office. The extraordinarily slow and time-consuming service does not guarantee that you will leave with a reservation for a ticket or hotel room.

Many people think that implementing new technology into their current businesses will automatically bring about digital transformation. This is referred regarded as digitization instead. Transferring your company's operations to the digital sphere is what it entails. The concept of digital transformation, on the other hand, is much more expansive. It's all about using new, digital methods to do tasks. According to Forbes, there is a 70% risk that an organization's digital transformation effort will fail and it won't be able to accomplish its initial goal. Every revolution requires a strategic plan, and the journey toward digital transformation is no different.

The hospitality industry has embraced the Internet of Things (IoT) and gone one step further by enabling connections between their guests' own digital devices and their Property Management system, commonly known as hotel management software.

It substantially enhances hotel operations internally. Your hotel management software will keep cleaning and the front desk in sync without the need for manual check-in paperwork. Hotels now feature integrated sensors for TVs, TV lighting, and speech recognition for in-room customer service. These reduce hotel costs and rates by taking a sizable amount of work off the front desk. The process of digital transformation follows the same strategy.

Latest Housekeeping Technologies

Hotels are implementing new equipment and technology to streamline daily housekeeping tasks and enhance guest satisfaction in order to comply with strict health and safety requirements. Parvez et al (2022) Housekeeping software, Voice and app control communication, Robotics Housekeeping team AI & IOT in housekeeping.

Hotel rooms with Navigator Tablets can opt-in for housekeeping. The tablets also include voice control, UV sanitization, and other unique requests for services like maintenance, towels and linens, coffee, and tea. The Ready Room feature on this tablet not only makes it more comfortable for visitors, but it also reduces housekeeping expenses and boosts guestroom turnover from an operational perspective. o boost productivity and streamline internal communications, many hotels are upgrading to all-in-one property management systems. The software's housekeeping features include room upkeep and administration, cleaning schedules, task delegation, and status tracking. Electrostatic sprayers, a portable or backpack device that employs strong disinfectant on high-touch surfaces, are the most widely use. Training is essential when putting any new machinery or technology into use. A lot of hotels have adopted bite-sized, digital training to give staff members access to materials on-demand, making it easier for them to onboard, retool, or upskill workers.

Housekeeping Software

Housekeeping software allows you to organize and systematically carry out day to day operations. There is many software which are now available for use by the hospitality sectors the few popular and reliable software used by major hospitality housekeeping sectors are Flex keeping, Optii and TraknKleen.
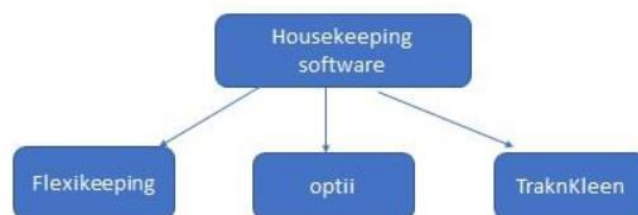
Flex keeping is a comprehensive app Housekeepers can be remotely scheduled a day, week, or months in advance to save time. Use our clever AI to swiftly and fairly assign rooms with the push of a button. Housekeepers utilise smart phones throughout their shift to validate that the rooms are clean, to update and remark on jobs, and to immediately alert their supervisors to any necessary inspections. This software optimizes operations saves time and improves quality. Housekeeping activities like Work allocation, digital checklist, Team communication and Analytics can be performed with ease and perfection.

The primary goals of Optii are productivity and real-time operating visibility. More than just a digital check list, it is. This product is the only one on the market that uses predictive technology to create daily room attendant routes based on visitor characteristics and hotel demands, deliver services efficiently, and improve teamwork. You may feel confident when you have clear visibility and data-driven insights.

TraknKleen is an IoT technology solution created to assist hotels in improving housekeeping procedures and give travellers protection and peace of mind. This software automatically tracks the date, time, and length of the cleaning process for guestrooms and public areas in a hotel, TraknKleen t collects data from several sources, including housekeeping carts, I.D. cards, cleaning supplies, and other assets. The technology keeps track of the use of designated cleaning resources, such as electrostatic sprayers in all guest spaces, and produces an audit trail for housekeeping activities. This enables hotels who use TraknKleen to give corporate clients, vacationers, and hotel brands immediate access to pertinent and trustworthy information about the systematic and organised delivery of property-based cleaning activities.

Robotic Housekeeping team
Vacuuming Robots
Robots in Housekeeping is used not to replace housekeeping staff instead is introduced to assist the staff in daily operations like Vacuuming. A company called maid Bot introduced "Rosie" The Vacuuming robot to assist staff in vacuuming the floors, carpets in public areas and rooms. Rosie has become one stop solution for the staff as it saves time and help them from any kind of injury which is caused due to the bad posture.

The housekeeping sector has experienced an unprecedented impact from COVID, and operations have undergone significant transformation. Rosie (Vacuuming Robot) can assist reduce the stress that an enlarged work list may generate, given that cleaning hours have increased due to improved cleaning methods. Rosie (Vacuuming Robot) can routinely clean public areas like lobbies and hallways while assisting housekeeping staff with more delicate and customer-focused duties. Rosie can monitor environmental information including humidity, temperature, and Wi-Fi signal strength. As a commercial floor-cleaning robot, Rosie has grown into an indoor mobile data platform that maps interior data across actual space. Rosie is a tremendous asset to many hotel businesses thanks to her cleaning abilities and data tracking abilities.

Webster & Ivanov (2020) We think robotics will be one of the suites of solutions to help hotels survive and thrive in these difficult times.

Rosie Vacuuming Robot

Source: https://roboticsandautomationnews.com/2018/01/12/maidbot-launches-rosie-the-robot-to-provide-room-service-at-hotels/15659/

Robotic service Cart

Rosie robotic service cart is also an addition introduced by the company Maid Bot. This cart basically is the replacements of the heavy-duty maid's cart trolley to transport guest supplies, amenities & linen from store and laundry to respective guest rooms while servicing the rooms. Rosie robotic service cart helps decrease room servicing time, lower down the risk of injuries, provide right statistics & metrics.


Rosie Robotic Service cart

Source: https://5elementsrobotics.com/rosie-robotic-service-cart/

AI & IOT in Housekeeping

Artificial intelligence is a key component of many of the new housekeeping technology solutions that automate routine operations and lighten the load on staff. Huang & Rust (2018) The housekeeping department can benefit greatly from the Internet of Things (IoT) and IoT devices by efficiently using their time. Cleaning guest-occupied rooms is one of the greatest issues housekeeping personnel frequently encounter. Although housekeeping personnel makes every effort to avoid disturbing guests while they are in their rooms, this frequently leads to journeys to rooms when visitors are still asleep. ng the housekeeping department to make good use of their time. This issue can be resolved by alerting staff to unoccupied rooms using IoT and AI. Using artificial intelligence, staff members may determine the likelihood that a room will be occupied or vacant at any particular time by spotting larger trends. This technology is also capable of foreseeing how guests will use amenities like toiletries. IOT is playing a very useful role in Facility sector like malls, Offices, Multiplex where the traffic of people are too high especially in washrooms. IOT technology like Smart bins which notifies the housekeeping staff regarding the filling rate of the Bin which becomes easy for the staff to empty out trash before it is overfilled, also the smart bins help sort the type of waste as per the category. smart washroom sensors notify you when the washroom needs cleaning which again is a useful technology.

Smart bins

Source: https://www.facilityapps.com/iot-cleaning-facility-landscaping/
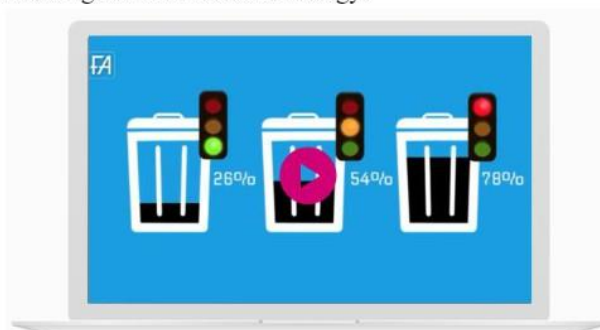
Internet of Clean (IOC)

IOC is new concept by Diversey it's an intelligent solution where all the equipment's are remotely connected with cloud-based system. The Internet of Clean uses sensor-generated data to remotely monitor machinery, equipment, and processes. Complete visibility into operations, dosage, compliance, and machine performance is attainable through data analytics. Users of the platform can examine data and trends using an intuitive dashboard and a web site. With the aid of clear-cut, quick-to-interpret KPIs, this quantitative data provides our customers with invaluable, real-time insight into their business operations. You can raise your quality standards and cut the expense of cleaning and hygiene programmes thanks to this in-depth information.

Internet of Clean

Source: https://diversey.com/en/solutions/IOC

Conclusion

Technology is no longer a "Nice to have" but a "Must have" in hospitality Housekeeping. Technological advancements whether its software, robot, AI or IOT, digitization in housekeeping is going to be a continuous process. The paper gives a theoretical framework by reviewing research papers, review articles from indexed journals of how housekeeping department has progressed from being inexperienced in technology to automated housekeeping. Technological readiness is one of the USP's to create a positive and everlasting impression on the guest or customers. This study also mentions all the technological trends which are improving the day-to-day housekeeping operations.

References

[1] Buhalis, D., & Leung, R. (2018). Smart hospitality—Interconnectivity and interoperability towards an ecosystem. *International Journal of Hospitality Management*, *71*(March 2017), 41–50. https://doi.org/10.1016/j.ijhm.2017.11.011

[2] Dautenhahn, K. (2007). Socially intelligent robots: Dimensions of human-robot interaction. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *362*(1480), 679–704. https://doi.org/10.1098/rstb.2006.2004

[3] El-Said, O., & Al Hajri, S. (2022). Are customers happy with robot service? Investigating satisfaction with robot service restaurants during the COVID-19 pandemic. *Heliyon*, *8*(3), e08986. https://doi.org/10.1016/j.heliyon.2022.e08986

[4] Huang, M. H., & Rust, R. T. (2018). Artificial Intelligence in Service. *Journal of Service Research*, *21*(2), 155–172. https://doi.org/10.1177/1094670517752459

[5] Ivanov, S., Gretzel, U., Berezina, K., Sigala, M., & Webster, C. (2019). Progress on robotics in hospitality and tourism: a review of the literature. *Journal of Hospitality and Tourism Technology*, *10*(4), 489–521. https://doi.org/10.1108/JHTT-08-2018-0087

[6] Jiang, Y., & Wen, J. (2020). Effects of COVID-19 on hotel marketing and management: a perspective article. *International Journal of Contemporary Hospitality Management*, *32*(8), 2563–2573. https://doi.org/10.1108/IJCHM-03-2020-0237

[7] Mercan, S., Cain, L., Akkaya, K., Cebe, M., Uluagac, S., Alonso, M., & Cobanoglu, C. (2021). Improving the service industry with hyper-connectivity: IoT in hospitality. *International Journal of Contemporary Hospitality Management*, *33*(1), 243–262. https://doi.org/10.1108/IJCHM-06-2020-0621

[8] Orea-Giner, A., Fuentes-Moraleda, L., Villacé-Molinero, T., Muñoz-Mazón, A., & Calero-Sanz, J. (2022). Does the Implementation of Robots in Hotels Influence the Overall TripAdvisor Rating? A Text Mining Analysis from the Industry 5.0 Approach. *Tourism Management*, *93*(June). https://doi.org/10.1016/j.tourman.2022.104586

[9] Parvez, M. O., Öztüren, A., Cobanoglu, C., Arasli, H., & Eluwole, K. K. (2022). Employees' perception of robots and robot-induced unemployment in hospitality industry under COVID-19 pandemic. *International Journal of Hospitality Management*, *107*(September), 1–11. https://doi.org/10.1016/j.ijhm.2022.103336

[10] Patil, A., Patil, A. D. Y., Management, H., & Technology, C. (2020). *A study on the innovative trends & practices ensued in housekeeping department of hotels .* *6*(2), 525–529.

[11] Reis, J., Melão, N., Salvadorinho, J., Soares, B., & Rosete, A. (2020). Service robots in the hospitality industry: The case of Henn-na hotel, Japan. *Technology in Society*, *63*, 101423. https://doi.org/10.1016/j.techsoc.2020.101423

[12] Samala, N., Katkam, B. S., Bellamkonda, R. S., & Rodriguez, R. V. (2022). Impact of AI and robotics in the tourism sector: a critical insight. *Journal of Tourism Futures*, *8*(1), 73–87. https://doi.org/10.1108/JTF-07-2019-0065

[13] Shin, H., & Kang, J. (2020). Reducing perceived health risk to attract hotel customers in the COVID-19 pandemic era: Focused on technology innovation for social distancing and cleanliness. *International Journal of Hospitality Management*, *91*(September), 102664. https://doi.org/10.1016/j.ijhm.2020.102664

[14] Teng, H. Y. (2019). Job crafting and customer service behaviors in the hospitality industry: Mediating effect of job passion. *International Journal of Hospitality Management*, *81*(March), 34–42. https://doi.org/10.1016/j.ijhm.2019.03.013

[15] Webster, C., & Ivanov, S. (2020). Future tourism in a robot-based economy: a perspective article. *Tourism Review*, *75*(1), 329–332. https://doi.org/10.1108/TR-05-2019-0172

[16] Yang, H., Song, H., Cheung, C., & Guan, J. (2021). How to enhance hotel guests' acceptance and experience of smart hotel technology: An examination of visiting intentions. *International Journal of Hospitality Management*, *97*(April), 103000. https://doi.org/10.1016/j.ijhm.2021.103000

[17] Yu, C. E. (2020). Humanlike robots as employees in the hotel industry: Thematic content analysis of online reviews. *Journal of Hospitality Marketing and Management*, *29*(1), 22–38. https://doi.org/10.1080/19368623.2019.1592733

[18] Buhalis, D., & Leung, R. (2018). Smart hospitality—Interconnectivity and interoperability towards an ecosystem. *International Journal of Hospitality Management*, *71*(March 2017), 41–50. https://doi.org/10.1016/j.ijhm.2017.11.011

[19] Dautenhahn, K. (2007). Socially intelligent robots: Dimensions of human-robot interaction. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *362*(1480), 679–704. https://doi.org/10.1098/rstb.2006.2004

[20] El-Said, O., & Al Hajri, S. (2022). Are customers happy with robot service? Investigating satisfaction with robot service restaurants during the COVID-19 pandemic. *Heliyon*, *8*(3), e08986. https://doi.org/10.1016/j.heliyon.2022.e08986

[21] Huang, M. H., & Rust, R. T. (2018). Artificial Intelligence in Service. *Journal of Service Research*, *21*(2), 155–172. https://doi.org/10.1177/1094670517752459

[22] Ivanov, S., Gretzel, U., Berezina, K., Sigala, M., & Webster, C. (2019). Progress on robotics in hospitality and tourism: a review of the literature. *Journal of Hospitality and Tourism Technology*, *10*(4), 489–521. https://doi.org/10.1108/JHTT-08-2018-0087

[23] Jiang, Y., & Wen, J. (2020). Effects of COVID-19 on hotel marketing and management: a perspective article. *International Journal of Contemporary Hospitality Management*, *32*(8), 2563–2573. https://doi.org/10.1108/IJCHM-03-2020-0237

[24] Mercan, S., Cain, L., Akkaya, K., Cebe, M., Uluagac, S., Alonso, M., & Cobanoglu, C. (2021). Improving the service industry with hyper-connectivity: IoT in hospitality. *International Journal of Contemporary Hospitality Management*, *33*(1), 243–262. https://doi.org/10.1108/IJCHM-06-2020-0621

[25] Orea-Giner, A., Fuentes-Moraleda, L., Villacé-Molinero, T., Muñoz-Mazón, A., & Calero-Sanz, J. (2022). Does the Implementation of Robots in Hotels Influence the Overall TripAdvisor Rating? A Text Mining Analysis from the Industry 5.0 Approach. *Tourism Management*, *93*(June). https://doi.org/10.1016/j.tourman.2022.104586

[26] Parvez, M. O., Öztüren, A., Cobanoglu, C., Arasli, H., & Eluwole, K. K. (2022). Employees' perception of robots and robot-induced unemployment in hospitality industry under COVID-19 pandemic. *International Journal of Hospitality Management*, *107*(September), 1–11. https://doi.org/10.1016/j.ijhm.2022.103336

[27] Patil, A., Patil, A. D. Y., Management, H., & Technology, C. (2020). *A study on the innovative trends & practices ensued in housekeeping department of hotels*. *6*(2), 525–529.

[28] Reis, J., Melão, N., Salvadorinho, J., Soares, B., & Rosete, A. (2020). Service robots in the hospitality industry: The case of Henn-na hotel, Japan. *Technology in Society*, *63*, 101423. https://doi.org/10.1016/j.techsoc.2020.101423

[29] Samala, N., Katkam, B. S., Bellamkonda, R. S., & Rodriguez, R. V. (2022). Impact of AI and robotics in the tourism sector: a critical insight. *Journal of Tourism Futures*, *8*(1), 73–87. https://doi.org/10.1108/JTF-07-2019-0065

[30] Shin, H., & Kang, J. (2020). Reducing perceived health risk to attract hotel customers in the COVID-19 pandemic era: Focused on technology innovation for social distancing and cleanliness. *International Journal of Hospitality Management*, *91*(September), 102664. https://doi.org/10.1016/j.ijhm.2020.102664

[31] Teng, H. Y. (2019). Job crafting and customer service behaviors in the hospitality industry: Mediating effect of job passion. *International Journal of Hospitality Management*, *81*(March), 34–42. https://doi.org/10.1016/j.ijhm.2019.03.013

[32] Webster, C., & Ivanov, S. (2020). Future tourism in a robot-based economy: a perspective article. *Tourism Review*, *75*(1), 329–332. https://doi.org/10.1108/TR-05-2019-0172

[33] Yang, H., Song, H., Cheung, C., & Guan, J. (2021). How to enhance hotel guests' acceptance and experience of smart hotel technology: An examination of visiting intentions. *International Journal of Hospitality Management, 97*(April), 103000. https://doi.org/10.1016/j.ijhm.2021.103000

[34] Yu, C. E. (2020). Humanlike robots as employees in the hotel industry: Thematic content analysis of online reviews. *Journal of Hospitality Marketing and Management, 29*(1), 22–38. https://doi.org/10.1080/19368623.2019.1592733