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Digital Transformation in the Hospitality Industry

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Digital Transformation in the Hospitality Industry

We are now experiencing the fourth industrial revolution, a period marked by emerging technologies such as artificial intelligence, robotics, virtual reality, the Internet of Things, and fifth-generation wireless technology. This period has significantly transformed our hospitality industry and will continue to do so. The recent Covid-19 pandemic has accelerated this digital transformation resulting in a widening technology-mediated customer experience. This article will highlight the current applications of three innovative technologies in the hospitality industry and illustrate how technological innovations can transform hospitality business operations and marketing as well as reshape customer experience.

Robotics in Hospitality

With the advancement in Artificial intelligence (AI), service robots have become more commonplace in hospitality. Service robots are “system-based autonomous and adaptable interfaces that interact, communicate, and deliver service to an organization’s customer” (Wirtz et al., 2018, p. 109). The core interactive and communicative features differentiate service robots from other self-service machines, which result in unprecedented human-technology interactions in the hospitality industry.

Tuomi et al. (2021) suggest that service robots play multiple roles in hospitality service production and delivery. For instance, in the service production process, disinfection robots, which emit UV light to kill viruses and bacteria, were announced to be used in airports and hotels worldwide to ensure a safe and clean environment (Greg, 2020). YOTEL Boston was one of the first hotels to adopt UVD robots. The robots drive around autonomously in high-touch public areas and select rooms at the hotel, removing all airborne viruses and bacteria. As an extension of the hotel's "SmartStaySafety" operation, the use of UVD robots not only provides a safe environment but also assures guests that they are being protected.

In the service delivery process, service robots assist frontline staff in a sequence of service encounters. For instance, the robot concierges assist employees with guest greetings upon arrival, transporting luggage, guiding guests, and delivering room service. Empowered by the pre-programmed AI and machine learning systems, service robots can effectively respond and interact with guests, even in multiple languages.

While robots make significant contributions to operational efficiency, they also raise concerns. Service robots are still novel in hospitality. Their ability to cope with unexpected, dynamic conditions remains to be fully explored. If guests do not follow the pre-set route, service robots may fail to respond, which can lead to a service failure. Thus, a variety of hospitality businesses, including restaurants, airports, and theme parks, need to carefully consider which service process stage is more suitable for service automation and to develop specific service recovery strategies in response to robot service failure.

Besides service robots, AI-powered online chatbots are also employed to provide swift answers to customers via live chats. With easy access through mobile apps, hotel websites or social media, chatbots provide customers with immediate responses 24 hours a day, significantly improving customer engagement. In addition, chatbots can be extremely helpful during the current pandemic, since hospitality businesses have been short-staffed.

Virtual Reality (VR) and Augmented Reality (AR) in the Hospitality Industry

Sitel group (Jena, 2020) found that customers believed VR simulations would be the best tool for hospitality operators to create a compelling customer experience. The hospitality industry has witnessed the rise in virtual reality (VR) applications over the past few years. Considering the intangible features of the hospitality experience, VR can make a huge difference in a customer's booking stage. Through the digitally

accommodated environment, customers can have a much clearer sense of what they are expecting, thus attracting more prospective customers. One example of VR application is the virtual tour video, which offers guests a first-person point of view of the property. By simply clicking the mouse or wearing a headset, guests can experience a digital walkthrough with a 360-degree view and even see the layout of the rooms in a hotel. This not only offers customers a chance to experience prior to booking, but also allows the hospitality business to benefit from the “try before you buy” marketing strategy.

Unlike VR, which puts customers in a completely virtual environment, augmented reality (AR) is about enhancing the physical environment and the experience of exploring one’s surroundings in real-time. The technology operates by overlaying digital components into a live picture of reality, which can be easily accessed through a smartphone. As a result, AR is extremely valuable for enhancing customers’ indoor experiences in the hospitality industry.

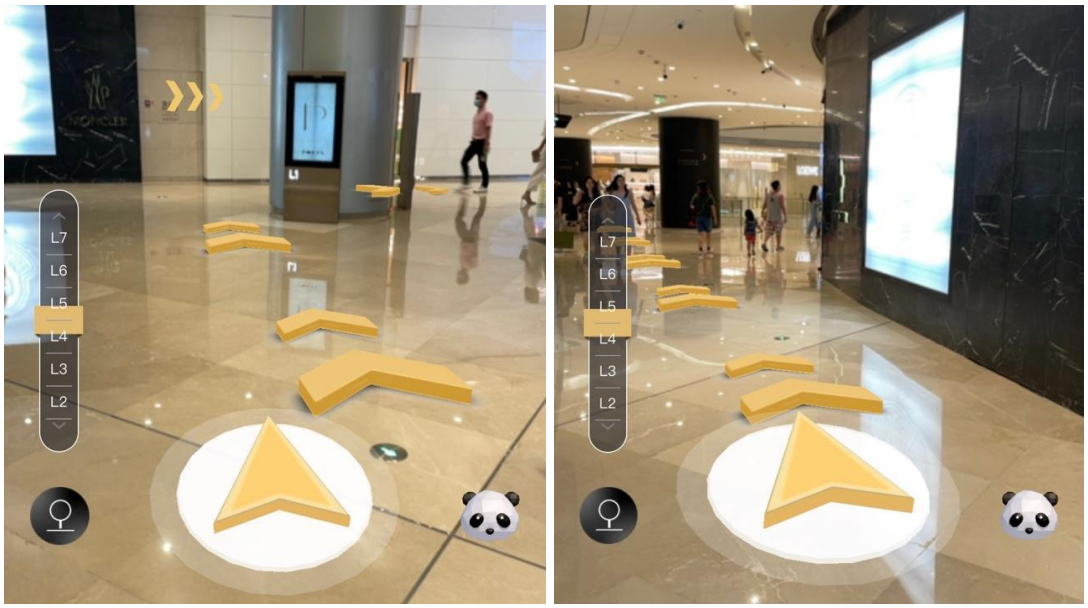

Figure 2 IFS-ARgo Navigation (Photo source: www.argo.cdifs.cn)

The current applications of AR in hospitality are largely for entertainment and practical purposes. The first is about creating enjoyable guest experiences in an interactive environment on-site. One example is the Best Western Hotel Group’s experiment with AR and Disney stars. Using the mobile app, children can see themselves along with Disney characters in certain areas in the property, which creates an enjoyable experience for children exploring the hotel. Another application of AR is indoor navigation. The IFS shopping mall in Chengdu, China is one of the few properties that has incorporated the technology. Similar to Google maps, AR navigation, the

“IFS-ARgo” mini-program, uses the phone camera to capture a live picture of reality and locate guests. Then, it superimposes the directions and guidance onto the live picture. Using the “IFS-ARgo” mini program on WeChat, customers can easily find their ways to shops, elevators, and parking bays.

Internet of Things

By zhu difeng on Shutterstock

Internet of Things (IoT) refers to “an ever-growing network of connected devices which communicate with a central server as well as with each other” (Car et al., 2019, p. 163). In the hospitality industry, IoT provides integrated services, such as automated door locks, light switches, electric blinds, and voice-assistant devices, which are connected on a network. These allow customers to control or monitor their devices from a central server, such as a mobile phone or a tablet.

The hospitality industry has already begun using IoT to improve their businesses and shape customer experience through operation efficiency and personalization. For example, customers can use their mobile phones for self-check-in and check-out. Hilton already offers an option of digital check-in via mobile devices whereby customers can use electronic key cards or mobile room keys embedded in mobile phones to open the room door. Rooms also become “smart” with the help of IoT, which is also called the “connected room” at Hilton hotels. Customers can control many in-room features, such as lighting, room temperature, water temperature, curtains, and TV through their mobile

phones or provided tablets. Customers can also use voice-controlled assistants, for example, the *Amazon Alexa*, to control those in-room features, and order food or drinks, which can be delivered by autonomous delivery robots. In addition, devices, such as luggage carts with GPS function and sensors in the parking lot, can help customers to locate their luggage and cars. Thus, IoT helps improve service processes and makes customer experiences smoother.

Moreover, IoT goes beyond convenience and provides more personalized and customized service. It obtains real-time data through continuous tracking from various devices, as well as a collection of customer information that was previously unavailable, such as preferences, routines, and habits (Marek & Woźniczka, 2017). On one hand, IoT can collect customers' preferences for in-room features, and the data can then be used to customize the room settings for their next stay. On the other hand, IoT with locational information can send real-time personalized recommendations to customers based on their stored preferences. For example, customers may receive messages or advertisements about nearby tourist attractions, local restaurants or transportation options when they are geographically close to the business or property, based on their preferences, thus improving customer satisfaction through personalized and customized recommendations.

There is still plenty of scope for IoT in hospitality with more connected devices collecting customer data. Together, with new technologies such as AI, big data, and cloud computing, IoT will further enable hospitality practitioners to manage and analyze valuable data. Moreover, with 5G networks, high-speed internet can significantly enhance the power of IoT, resulting in a more connected hospitality world that benefits both providers and customers.

Key Issues & Challenges to Consider

While acknowledging the transformative nature of digital technologies, there are several emerging issues that hospitality practitioners must take into consideration when embracing digital technologies, which include security, privacy, costs, and human touch in hospitality.

Security is a fundamental issue in digital transformation in any industry, including hospitality. Since digital technologies such as AI and IoT are highly connected, they are prone to hacking (Kansakar et al., 2019). Also, the broad connection of various devices brings vulnerability to digital networks. For example, problems in a simple connected device may cause damage to other connected devices and even the entire network.

Thus, hospitality managers must prepare for security implications of digital transformation, which can be accomplished by adopting high-security technologies to reduce software vulnerabilities, building resources to mitigate risk of cyber-attacks, and training employees on cyber-attack prevention.

Privacy is another important factor as highly personalized services rely on storing and tracking customer preferences and behavior through digital technologies. Customers are increasingly aware of their data privacy, and any leak of consumer data can lead to a crisis in hospitality. As such, a transparent, strict, and clear privacy policy clarifying what data can be collected and shared, and who can own the data, is necessary. This assures customers their data are in good hands and helps build trust between customers and business providers.

Another challenge is associated with the high costs of employing these digital technologies. For small businesses, using digital technologies in their daily operations may require significant upfront investments. Thus, it is becoming critical for hospitality businesses to consider what digital technologies would most benefit their business. For example, while VR is powerful in providing interactive and immersive experiences, it requires significant investments on high-quality VR headsets and hardware. Thus, for small hospitality businesses, they need to prioritize what works best for them when adopting digital technologies. Some simple digital technologies might be tested before making significant investments, such as digital menus, to make sure small business owners are comfortable adopting digital technology, along with the required efforts and investments.

The last issue to keep in mind is that of the paradox between digital convenience and in-person experience. In hospitality, particularly in fine dining restaurants, customer-staff interaction is highly valued by customers. Digital transformation, such as voice assistants, might diminish that interaction. Thus, it is important for hospitality businesses to strike a balance between digital convenience and in-person experiences. Key considerations include judging what services cannot be replaced by digital tools, preservation of the choice for customers to decide between digital or human services to maximize customer experience, and incorporation of interactive digital features in the process.

Covid-19 has expedited the digital transformation of the hospitality industry with unimaginable speed, forcing many hospitality practitioners to adopt digital technologies that would otherwise not be adopted so quickly. Digital transformation in the hospitality industry is more significant than ever, and it’s time for hospitality businesses to embrace this change.

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