

# Touchless technology for contactless hospitality – A real post-COVID alternative?

**Zsolia Hajnalka Cserdi**  
Corvinus University of Budapest  
**Zsolia Kenesei**  
Corvinus University Budapest

Cite as:

Cserdi Zsolia Hajnalka, Kenesei Zsolia (2022), Touchless technology for contactless hospitality – A real post-COVID alternative?. *Proceedings of the European Marketing Academy*, 51st, (107285)

Paper from the 51st Annual EMAC Conference, Budapest, May 24-27, 2022



## **Touchless technology for contactless hospitality – A real post-COVID alternative?**

### **Abstract**

The COVID-19 epidemic has severely affected the hotel sector around the world. The current crisis may lead to an even stronger demand for touchless technologies and the introduction of smart services to reassure hotel guests. The aim of our research is to obtain a comprehensive picture of the attitudes towards different types of interactions through guests' hotel experience and in this context to investigate the incentive effect of COVID on the future search for contactless hotel service alternatives. In our research, we conducted a content analysis of 104 in-depth interviews, supplemented by quantitative analyses. Our results show that among the groups of hotel contacts, the most disturbing factor is interaction with other guests, followed by contact with physical objects, then employee interactions. Despite the assumptions, our results suggest that COVID has little or no effect on the intention to book in a smart hotel implementing contactless service after the pandemic.

*Keywords: contactless hospitality, touchless technology, smart hotel*

*Track: Tourism Marketing*

## 1. Introduction

According to the UNWTO 2021 report, in 2020, international arrivals fell by 74% compared to the previous year, with tourism suffering its deepest crisis ever due to the health, social and economic emergency caused by the coronavirus pandemic (UNWTO World Tourism Barometer, 2021). The loss of approximately USD 1.3 trillion in international export earnings is more than ten times the amount recorded during the global crisis in 2009. To survive, businesses in the tourism sector need to redefine their business models. They need to adapt to declining demand and increased costs, but this requires rethinking the profitability of the industry and opening to new target groups through innovative services Fotiadis, Polyzos, and Huan, 2021). In the hotel industry, the crisis caused by the coronavirus epidemic could lead to an even stronger demand for the introduction of smart services to reduce human contact and reassure hotel guests (QianTing, Chung, and Chung, 2021). The automation of hotel service processes allows for a reduction of contacts and interactions during a hotel stay, which can encourage more guest arrivals. While several research studies have already explored robotics and AI in this area (e.g., Jiang & Wen, 2020; Zeng, Chen, and Lew, 2020), from a practical perspective, one of the most obvious solutions for contactless hotel service could be self-service mobile technology (Rahimizhian & Irani, 2020).

To evaluate the investment in technological solutions for service providers, it is important to assess the extent to which the changes in consumers' travel habits caused by the epidemic will be permanent in the long term. In line with this, accommodation providers will have to make an important strategic decision on whether technology-driven solutions that may be preferred due to the coronavirus will also be desirable in the post-COVID era in the hotel sector which traditionally characterized by personal service. Accordingly, our research question is as follows: *“Does COVID change potential hotel guests' attitudes towards contactless smart hotels?”*

The aim of our research is to obtain a comprehensive picture of the attitudes towards different types of contacts and interactions through guests' hotel experience and as a novel contribution distinguish between the degree of their disturbance. The investigation of the incentive effect of COVID on the future intention to search for contactless hotel service alternatives is also in our focus. Our study continues with a literature review, followed by a methodological chapter including both qualitative and quantitative elements, then the results of our research will be shown. Research limitations, theoretical and practical implications of our study will be summarized in the Conclusion chapter.

## 2. Literature Review

Measures taken to flatten the spread curve of the coronavirus (e.g., community quarantine, social distancing, travel restrictions) have resulted in the closure of hotels worldwide (Gursoy & Chi, 2020). The different waves of the virus have led to country-specific governmental approvals or bans on the provision of accommodation services at varying intervals, making business planning extremely difficult and further damaging the already low levels of consumer demand for travel. For those hotels that are not on the verge of bankruptcy and can remain open, the virus situation greatly modifies their operating conditions in order to preserve the health and safety of their employees and guests and to reduce the risk associated with the use of the service (Gössling, Scott, and Hall, 2020).

According to preliminary findings by Gursoy, Chi, and Chi (2020), potential guests are expecting service providers to implement, in addition to disinfection efforts (such as providing hand sanitizing facilities, employees wearing masks and gloves), social distancing, limiting the number of customers served, cleaning surfaces that can be touched by guests more frequently, and educating employees on health and safety protocols. Besides, more than 70% of respondents believe that COVID will make it essential for hotels to integrate various technological tools into their service processes to minimise human interaction. In this sense, there is a huge demand for the use of touchless technologies (Rahimzhanian & Irani, 2020). In the hotel environment, touchless technologies can refer to service robots, contactless NFC payment, service elements that can be performed with smartphones, physical keyless/keycardless access control systems, contactless elevators, etc. Touchless technologies enable contactless service provision in hospitality domain (Kim, Kim, Badu-Baiden, Giroux, and Choi, 2021). An example of implementing contactless service in hotel environment during the epidemic is smart hotels (Chen, Tzeng, Tham, and Chu, 2021). The term smart hotel is a practical business model used by hotels whose operations can be made possible by the cooperation of numerous information technologies to serve their hotel guests. (Lai & Hung, 2017; Wu & Cheng, 2018).

Research on technology-substituted hotel services under the influence of COVID has begun to emerge in the academic scene, albeit in small numbers, typically on the topics of robotisation and artificial intelligence (e.g., Zeng et al., 2020; Kim et al., 2021; Gaur, Afaq, Singh, and Dwivedi, 2021). According to Zeng et al. (2020), although the consumer adoption of these new technologies has often been controversial in the past - referring to job losses, privacy concerns - the viral situation may encourage a positive perception of their use. It is their belief that this process of adoption will continue as the viral situation subsides. Gaur et al.

(2021) argue that robotisation and AI could revitalise the hotel sector, while restoring guest confidence in safe hotel practices. Kim et al. (2021) found that respondents in the COVID period have a much more positive attitude towards robotic service than in the pre-pandemic period. They predict that once the epidemic situation has subsided, it is possible that personal service will again be preferred. Despite the growing number of studies emphasizing the role of robotics and AI service provision in connection with COVID-19, we argue that self-service mobile technology is a more suitable option for accessing contactless hospitality in practice. Nevertheless, research regarding this specific touchless technology with COVID-impacted focus on contactless hospitality is scarce (e.g., Rahimizhian & Irani, 2020). We aim to expand this field with our research.

### **3. Method**

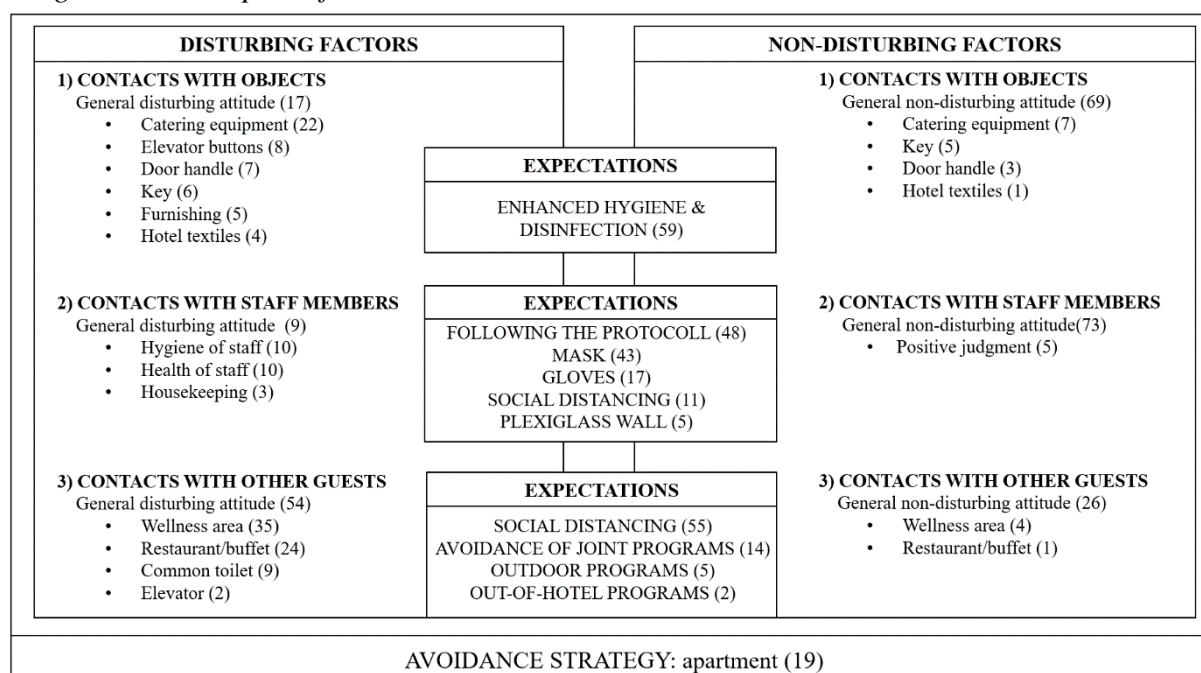
In order to answer our research question in a multifaceted way, structured in-depth interviews were conducted to explore the chosen topic. The interviews were performed by marketing master students of Corvinus University of Budapest in the spring semester of the academic year of 2021 as part of their services marketing course. Being a qualitative method, arbitrary sampling was used (non-probability sampling), including snowball selection (Biernacki & Waldorf, 1981). When determining the number of interviews, the aim was to enable the collected data to be analysed quantitatively (quantify basic statistical calculations), and therefore a total of 108 interviews were conducted. After quality check, 104 interviews were subjected to final analysis. The interview transcripts were examined using content analysis. Content analysis involves a multi-stage coding process; dividing the text into categories, naming them, and then examining and interpreting their occurrence throughout the written material, taking care to continuously reflect on new meanings (Creswell & Creswell, 2017). In terms of the demographic distribution of the sample, 55.8% are female (n=58), with an average age of 36.6 years. The youngest interviewee was 20 and the oldest was 74 years old. By two age groups, there is an almost equal proportion of people aged between 20 and 35 (51%) and over 35 (49%). In the interview guide, the introductory section was followed by general travel-related questions, also in the shadow of COVID-19. A separate hotel section helped us exploring changing preferences followed by questions to reveal attitudes towards a contactless hotel (after setting a real-life context for a smart hotel). Their willingness to stay in a contactless smart hotel was rated from 1 to 7 during the threatening epidemic situation (summer of 2021) and in the supposed post-COVID era (summer of 2022). This allowed us to examine their booking intentions in a quantifiable form, in addition to a qualitative analysis.

## 4. Results

### 4.1. The impact of COVID-19 on attitudes towards hotel contacts

As the result of the content analysis the COVID-related changes in the interviewees' attitudes towards hotel contacts and interactions are systematically collected and illustrated on Figure 1. Three groups of hotel contacts were distinguished: physical contact with objects, interactions with hotel staff and interactions with other guests. For each of these three categories, we collected the factors that were disturbing and non-disturbing for the interviewees, with a numerical representation of these specific factors. The resulting six categories also included an indication of general disturbing or non-disturbing attitudes, where these were. As an important result, the expectations expressed by the respondents were also aggregated in the three contact categories, which can help accommodation providers to address the challenges during the constantly prolonged COVID period.

Figure 1: The impact of COVID-19 on attitudes towards hotel contacts



Source: own editing

Our results show that the most disturbing factor in a hotel of the three types of contacts is the interaction with other guests. Interviewees would try to spend as little time as possible in common areas; third of them would avoid wellness areas (sauna, pool, bath etc.), which is at high risk of infection. In addition, some of them would only use it with a capacity limit.

*"I don't think I would use it for a while. Because I don't know how careful the other person is and, in a spa, no one is going to wear a mask in a sauna or a pool. I would not feel safe there. (Female, 33)"*

Almost a quarter of the interviewees expressed concerns about communal dining (restaurant/buffet), for which various solutions were suggested (e.g., extended dining times, room service, seating arrangements). More than half of the interviewees indicated the importance of maintaining distance in creating a sense of safety and the need to move hotel activities outdoors. In many cases, they would avoid such activities entirely and would prefer to choose activities outside the hotel with their fellow travellers only, without the involvement of other guests.

*"I would probably not go on such group trips but would rather organise them individually to avoid such groupings as much as possible." (Female, 47)*

The second most disturbing factor group was the physical contact with hotel objects. Among the specific objects mentioned, the most frequent were the various catering equipment (cutlery, plates, counter, etc.). Elevator buttons, door handles and room keys (in form of a traditional key or key card) were mentioned as distractions few times. Hotel furniture and textiles (e.g., towels, bed linen) were rarely noted. To mitigate concerns about objects, increased hygiene through visible and continuous disinfection, with hand sanitisers available, was almost a basic requirement, mentioned spontaneously by more than half of the respondents. Interaction with hotel staff was the least critical element of the contact factor groups.

*"I'm sure they will do their best to make sure that they follow the rules and even attend training sessions. They'll even take it more serious than in other sectors so they can reopen. They will have a much more disciplined staff." (Male, 23)*

Those for whom interaction with the staff is problematic would feel safer if employees were vaccinated, tested constantly to protect other employees, and avoid the risk of infection. In addition to the expected employee hygiene, the issue of room cleaning was raised as a problem, which would be avoided if possible, during a hotel stay. Compliance with the rules, enforcement of the protocol was also an important expectation for employees in general, but among the priority measures, wearing masks and gloves was the most prominent. Distancing from employees is also mentioned, and the use of glass or Plexiglas is also recommended to separate guests from front office staff. Of course, more permissive opinions were also expressed, as well as strongly positive ones about employees, praising their heroic behaviour. They appeared as a counterpoint to distrust in other guests; in this context they were less associated as a potential source of COVID infection.

*"They're heroes for daring to go to work under these circumstances, and for being open to business travellers at all." (Female, 29)*

Another important finding is that for some interviewees, staying in a hotel is so intimidating that they would rather not travel at all. In this respect, apartments would be a more desirable choice for them.

*“A hotel in an epidemic environment is out of the question. Only places are considered in such a situation where there aren’t large crowds, so apartments are the only option on the table nowadays.” (Female, 50)*

#### *4.2. The impact of COVID-19 on booking intentions to a contactless smart hotel*

Based on the qualitative content analysis, we can conclude that most of the interviewees consider that COVID has little or no impact on the booking intention of a contactless smart hotel. They linked this concept to technological progress (rather than to the epidemic situation), saying that the world is moving in that direction. Although interviewees expressed several concerns about the concept of a contactless hotel – having experienced problems with automated systems in other areas –, they identified several benefits that would make them keen to try such a service themselves. The epidemic situation is not a typical driver; rather the benefits of technology such as convenience, speed, and ease of use. Among the benefits of a contactless smart hotel, the influence of COVID and the role of touchless items were only marginally mentioned. To illustrate the wide range of opinions, there were some interviewees who stated that even with COVID, they would not stay in a contactless hotel because they could not adapt to the technological challenges.

*“Only if I go with someone who knows what to do. These are such new things, it’s more for the next generation to learn and use them.” (Female, 47)*

Some of the interviewees preferred the use of a contactless smart hotel during the presence of the coronavirus but otherwise refrain from using one. According to several interviewees’ opinion, the target audience for contactless smart hotels is more likely to be the young generation who are comfortable with digital solutions, foreign guests, or business travellers. Regardless of age, individuals with introverted personalities and technology-oriented groups were mentioned, in which case the use of a new type of service alternative might be desirable. However, some of the opinions give an indication of the complexity of the issue; even a close relationship with technology linked with young age do not necessarily results in a positive attitude towards a contactless hotel. Although many of the interviewees would like to try this alternative out of curiosity, they would not prefer it in the long term, as their perceptions suggest that they have negative feelings for instance about people losing their jobs.



Furthermore, there is still a huge demand for personal contact in a hotel environment. The lack of friendly, helpful staff in smart hotels – who are often a key element of the hotel's image and ambience –, is seen by the majority as an experiential setback.

*“I love human voice, human caring and human collaboration. So, for me that would be a world that is not attractive. It's something I would skip if I could. Even though it might be safer.”*  
(Male, 43)

In addition to the qualitative analysis, we also wanted to quantify the effect of COVID-19 on booking intentions to a contactless smart hotel. Based on the interviewees' booking probability, which was included as a question in the interviews, we checked quantitatively whether there is a difference between the probability of booking in a smart hotel for this year (summer 2021) and for the assumed end of the epidemic threat (summer 2022). The responses showed that the COVID situation has no influence on the probability of booking, as the two means are almost identical. For the summer of 2021, the mean of the responses is 3.99; with a standard deviation of 1.99, while for 2022 the mean is 3.88, with a standard deviation of 2.06. The paired t-test also indicates that there is no significant difference between the probability of staying in a contactless smart hotel due to the COVID threat being gone (Sig2tailed= 0.447, using a 5% confidence interval). The assumption from the qualitative content analysis that younger age groups may be more open to this type of hotel overall is also demonstrated by the results.

The mean of booking probability for the 20-35 age group for the summer of 2021 is 4.4 (with a standard deviation of 1.85), while the mean for the 35+ age group is lower at 3.57 (with a standard deviation of 2.06). The ANOVA analysis shows a significant difference between the means of the two groups, with a significance level of 0.034 for the F-test. (The analysis of variance can be performed in this case due to the significance level for the Levene's test is 0.301, thus homogeneity of variance exists.) While the probability of booking in 2022 for the younger age group seems to decrease with the passing of COVID (mean=4.09; standard deviation=1.9), the older age group's mean is slightly higher, compared to the previous year (mean=3.65; standard deviation=2.2). However, as the COVID threat disappears, the significant difference between the means of the two groups' probabilities of booking vanishes; the significance level for the F-test in the variance analysis is 0.269. (The calculation can be performed in this case, due to the significance level for the Levene's test is 0.115, thus homogeneity of variance exists.)

## Conclusion

In order to answer our research question: “*Does COVID change potential hotel guests’ attitudes towards a contactless smart hotel?*” a content analysis of a total of 104 in-depth interviews was conducted, supplemented by quantitative analysis. Our results show major changes in the attitudes towards contacts and interactions during a hotel stay; from the three contact groups, the most disturbing factor is the interaction with other guests, followed by contact with physical objects, and then employee interactions. Potential guests have the highest expectations for increased hygiene and disinfection, with a focus on keeping social distancing and strict adherence to protocol. It may be desirable to organise outdoor activities for those guests who are willing to spend time together safely. Despite the assumptions, the qualitative content analysis suggests that according to potential travellers COVID has little or no impact on the trial and success of a contactless smart hotel. Their booking probability also showed that there was no significant difference between their intentions this year and in 2022 (post-COVID era). Only the younger age group was more attracted to the option of a smart hotel during the COVID era, but the age difference disappeared in the hypothetical post-COVID period.

Consequently, it is important to reckon that the increasing demand for contactless technologies in hotel environments is far from certain, as predicted by other researchers (Jiang, & Wen, 2020; Rahimizhian, & Irani, 2020). Our results should be treated with caveats, as the predicted booking probability may not be consistent with the actual intention one year later. Cultural acceptance may also be a biasing factor in case of research on any kind of technological innovations, as consumer perceptions may vary widely across countries. Nevertheless, our results suggest that in order to prepare for the post-COVID era hotels should not focus exclusively on complete automation, but rather replace personal functions only in certain service elements.

## References

- Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, 10(2), 141-163.
- Chen, S. H., Tzeng, S. Y., Tham, A., & Chu, P. X. (2021). Hospitality services in the post COVID-19 era: Are we ready for high-tech and no touch service delivery in smart hotels?. *Journal of Hospitality Marketing & Management*, 1-24.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

- Fotiadis, A., Polyzos, S., & Huan, T. C. T. (2021). The good, the bad and the ugly on COVID-19 tourism recovery. *Annals of Tourism Research*, 87, 103117.
- Gaur, L., Afaq, A., Singh, G., & Dwivedi, Y. K. (2021). Role of artificial intelligence and robotics to foster the touchless travel during a pandemic: a review and research agenda. *International Journal of Contemporary Hospitality Management*.
- Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1-20.
- Gursoy, D., & Chi, C. G. (2020). Effects of COVID-19 pandemic on hospitality industry: Review of the current situations and a research agenda.
- Gursoy, D., Chi, C. G., & Chi, O. H. (2020). COVID-19 Study 2 Report: Restaurant and Hotel Industry. In *Would They Come Back? If They Would, WHEN?*. Carson College of Business, Washington State University.
- Jiang, Y., & Wen, J. (2020). Effects of COVID-19 on hotel marketing and management: a perspective article. *International Journal of Contemporary Hospitality Management*.
- Kim, S. S., Kim, J., Badu-Baiden, F., Giroux, M., & Choi, Y. (2021). Preference for robot service or human service in hotels? Impacts of the COVID-19 pandemic. *International Journal of Hospitality Management*, 93, 102795.
- Lai, W. C., & Hung, W. H. (2017). Constructing the smart hotel architecture—A case study in Taiwan. In *The 17th International Conference on Electronic Business, December* (pp. 4-8).
- QianTing, L., Chung, H. C., & Chung, N. (2021). A Study on the Factors Affect the Technology Satisfaction on AI Based Self-service Technology Service Failure in Hotel. In *Information and Communication Technologies in Tourism 2021* (pp. 123-127). Springer, Cham.
- Rahimizhian, S., & Irani, F. (2020). Contactless hospitality in a post-Covid-19 world. *International Hospitality Review*.
- UNWTO World Tourism Barometer (2021). Volume 19, Issue 1, January 2021. Retrieved from <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2021.19.1.1>  
(Last accessed: May 19, 2021)
- Wu, H. C., & Cheng, C. C. (2018). Relationships between technology attachment, experiential relationship quality, experiential risk and experiential sharing intentions in a smart hotel. *Journal of Hospitality and Tourism Management*, 37, 42-58.
- Zeng, Z., Chen, P. J., & Lew, A. A. (2020). From high-touch to high-tech: COVID-19 drives robotics adoption. *Tourism Geographies*, 22(3), 724-734.