COVID or VOID: A systematic literature review of technology adoption and acceptance in hospitality and tourism since the breakout of COVID-19

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Abstract
The purpose of this study was twofold. The first goal was to review and synthesize research pertaining to 'technology acceptance and COVID-19' from the years 2020, 2021, and early August 2022 in the realm of hospitality and tourism. The second goal was to dwell on the relevant technology adoption studies in order to provide a critical analysis and extract insights for future research theoretically and practically. A systematic literature review was performed. Findings indicate that some constructs were not properly used like perceived enjoyment and some constructs were overlooked like perceived interaction. Additionally, besides technology features, the characteristics of consumers need to be investigated to reveal the true underpinnings of the technology adoption behavioral process. However, inquiries regarding consumers' traits need to be expanded beyond basic demographics (e.g. age and gender). The paper systematically garnered technology acceptance research from the COVID-19 era in order to provide insights for future research directions in the post-COVID era. This work identified a lack of consensus over the theoretical underpinnings of technology acceptance research among tourism hospitality researchers. The study revealed the narrow research lenses focusing on particular empirical domains, mainly hotels, restaurants, and museums, and overlooking other contexts (e.g. airports, stations, within-city transportation, and events).

Keywords
Technology, COVID-19, systematic literature review, hospitality, tourism

Introduction
General view
The COVID-19 pandemic period was a special period for the technology adoption phenomenon. The pace and volume of adoption of technology by businesses and consumers’ acceptance of that technology have been accelerated due to the implications of COVID-19 (Gursoy and Chi, 2020; Gursoy et al., 2020). In parallel, as Yang et al. (2021) revealed, in academic circles, the acceptance of technology adoption by end-users in consumer contexts has attracted researchers from various academic disciplines including hospitality and tourism researchers to explore theoretical underpinnings and underlying mechanisms of behavioral intentions toward technology adoption in servicescapes in this special period.

Generally speaking, researchers from the field of hospitality and tourism can be categorized into two camps in terms of approaches toward technology adoption in services: (1) favorable to technology adoption in hospitality and tourism servicescapes (2) unfavorable. The camp that is favorable to technology...
adoption regards the hospitality and tourism industry as lagging behind other industries and service industries in terms of technology adoption. Regarding cost, return on investment, etc., the favorable group evaluates technology adoption as a unique solution. The researchers that are unfavorable to technology adoption, in other words, those who have reservations, address the core values of hospitality: welcome, human warmth, reception, and friendliness perceive the hospitality industry where humans meet their socializing and human interaction needs. The COVID-19 experience brought a new dimension to the discussion, which made the tourism hospitality community re-evaluate its standing regarding technology adoption. The purpose of our study revolves around this rekindled discussion.

**Purpose and significance**

The purpose of this study is twofold. The first goal is to review and synthesize research pertaining to ‘technology acceptance and COVID-19’ from the years 2020, 2021, and 2022 in the realm of hospitality and tourism. The second goal is to dwell on the relevant studies in order to extract insights for future research pertaining to technology acceptance theoretically and practically for the post-COVID era.

The significance of this study derives from bringing technology acceptance studies pertaining to COVID-19 together, published by early March 2022, under a single paper and seeking a structural vision for the post-pandemic era. Gretzel et al. (2020) and Yang et al. (2021) addressed the key role of technology in the long-term resilience of the hospitality and tourism industries. The present study curates the relevant literature in order to identify the impacts of COVID-19 on the behavioral intentions (acceptance/rejection, postponement, and continuance use) of customers toward technology adoption (Talwar et al. 2020).

**Methodology of sample selection**

The Web of Science was used as the research database platform to identify and select the studies that comprise the sample of the present research paper. On the same database, Web of Science, the number of studies identified using the keyword “technology acceptance” with no category restriction was over 10,000 (10,793); with the restriction of the category of ‘Hospitality, Leisure, Sport, Tourism” the studies exceed 250 (267). With the keyword formula (“Technology” AND “Acceptance”) and with no category restriction the number of studies exceeds 40,000 (43,895); with the restriction of the category of “Hospitality, Leisure, Sport, Tourism” the studies exceed 500 (538). As we targeted to sample technology acceptance studies in relation to COVID-19 pandemic times we used the keyword formula: “Technology” AND “Acceptance” AND “COVID-19” OR “Pandemic” OR “Coronavirus”. For our research, we identified 30 research articles published by early August of 2022. These 30 papers consisted of our research sample. Table 1 shows the studies identified within our sample.

**Results**

**Type, design, statistical method, scale, country, sample, site, time, technology, and context**

Table 2 includes information pertaining to the type of papers, statistical methods used, the measurement scales, the countries from which data was collected, sample sizes, the sites via which the data was obtained, the time frame for data collection, the technologies investigated, and the context in which the technologies were used. (see Table 2).

**Purpose, theory, constructs, and findings**

Table 3 provides information pertaining to the purpose, theory, constructs, and findings of sampled research articles.

**Discussion**

**General discussion**

Disruptive/devastating effects of technological developments during World War II led people to adopt negative attitudes towards technology (Harari, 2022). However, during COVID-19, the role of technology to facilitate pandemic constraints has resulted in positive attitudes toward technology. Relatedly, COVID-19 has brought a new phase to servicescapes by accelerating technology adoption (Iskender et al. 2022). Technology adoption and acceptance have been identified by Yang et al. (2021) as one of the five emerging research themes due to the COVID-19 pandemic. In this study, we had a closer look into acceptance of technology adoption studies and a systematic approach to extract insights shedding light on the future direction of the relevant literature in hospitality, tourism, and travel.

**Labor shortage.** High turnover rate is a long-lasting issue for the hospitality and tourism industries. Due to COVID-19, this labor shortage issue has been
Table 1. Study sample articles.

| N  | Authors                  | Year | Title                                                                 | Journal                                                                 |
|----|--------------------------|------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| 1  | Cha                      | 2020 | Customers’ intention to use robot-serviced restaurants in Korea:       | International journal of contemporary hospitality management           |
|    |                          |      | Relationship of coolness and MCI factors                              |                                                                        |
| 2  | Zhao and Bacao            | 2020 | What factors determining customer continually using food delivery apps | International journal of hospitality management                        |
|    |                          |      | during 2019 novel coronavirus pandemic period?                         |                                                                        |
| 3  | Gharibi                  | 2020 | The evolution of predictive models and tourism                         | Journal of tourism futures                                            |
| 4  | Ivanov et al             | 2020 | Biosecurity, crisis management, automation technologies and economic   | Tourism economics                                                      |
|    |                          |      | performance of travel, tourism and hospitality companies—a conceptual |                                                                        |
|    |                          |      | framework                                                              |                                                                        |
| 5  | Hao                      | 2021 | Acceptance of contactless technology in the hospitality industry:       | Asia pacific journal of tourism research                               |
|    |                          |      | Extending the unified theory of acceptance and use of technology Z     |                                                                        |
| 6  | Mason et al              | 2021 | It is worth a visit! website quality and visitors’ intentions in the   | Current issues in tourism                                              |
|    |                          |      | context of corporate museums: a multimethod approach                   |                                                                        |
| 7  | Rastegar et al           | 2021 | The adoption of self-service kiosks in quick-service restaurants       | European journal of tourism research                                   |
| 8  | Khan et al               | 2021 | Technology induction in education during COVID-19 is recreation or a    | European journal of tourism, hospitality and recreation                 |
|    |                          |      | curse? Integration of technological and behavioral factors from the    |                                                                        |
|    |                          |      | students’ perspective                                                 |                                                                        |
| 9  | Mejia et al              | 2021 | A wearable technology solution and research agenda for housekeeper     | International journal of contemporary hospitality management           |
|    |                          |      | safety and health                                                      |                                                                        |
| 10 | Romero and Lado          | 2021 | Service robots and COVID-19: Exploring perceptions of prevention       | International journal of contemporary hospitality management           |
|    |                          |      | efficacy at hotels in generation Z                                     |                                                                        |
| 11 | Kim et al                | 2021a| A change of perceived innovativeness for contactless food delivery     | International journal of hospitality management                        |
|    |                          |      | services using drones after the outbreak of COVID-19                  |                                                                        |
| 12 | Kim et al                | 2021b| Preference for robot service or human service in hotels? Impacts of     | International journal of hospitality management                        |
|    |                          |      | the COVID-19 pandemic                                                  |                                                                        |
| 13 | Palumbo                  | 2021 | Enhancing museums’ attractiveness through digitization: an investigation| International journal of tourism research                              |
|    |                          |      | of Italian medium and large-sized museums and cultural institutions    |                                                                        |
| 14 | Cheung et al             | 2021 | Consumer behavior and mobile payment: an empirical study of the        | Journal of China tourism research                                      |
|    |                          |      | restaurant industry                                                    |                                                                        |
| 15 | Hong et al               | 2021 | Factors affecting customer intention to use online food delivery       | Journal of hospitality and tourism management                           |
|    |                          |      | services before and during the COVID-19 pandemic                       |                                                                        |
| 16 | Khanra et al             | 2021 | Factors influencing the adoption postponement of mobile payment        | Journal of hospitality and tourism management                           |
|    |                          |      | services in the hospitality sector during a pandemic                   |                                                                        |
| 17 | Hao and chon             | 2021 | Are you ready for a contactless future? a multi-group analysis of      | Journal of travel and tourism marketing                               |
|    |                          |      | experience, delight, customer equity, and trust based on the          |                                                                        |
|    |                          |      | technology readiness index 2.0                                        |                                                                        |
| 18 | Hwang et al              | 2021 | A comparative study on the motivated consumer innovativeness of drone  | Journal of travel and tourism marketing                               |
|    |                          |      | food delivery services before and after the outbreak of COVID-19      |                                                                        |
| 19 | Garcia-Milon et al       | 2021 | Assessing the moderating effect of COVID-19 on intention to use        | Tourism management                                                     |
|    |                          |      | smartphones on the tourist shopping journey                           |                                                                        |
| 20 | Yang and Lee             | 2022 | How does the perceived physical risk of COVID-19 affect sharing        | Current issues in tourism                                              |
|    |                          |      | economy services?                                                     |                                                                        |

(continued)
increasing. A high percentage of the labor force left the industry due to the COVID-19 shutdown and are not planning to come back. The hospitality and tourism industries lost their human resources to other service industries. Therefore, some scholars like Ivanov et al. (2020) stated that technology is the future of tourism and hospitality considering the impacts of COVID-19, the current labor shortage, and beyond. Technology adoption is regarded as a solution to deal with a labor shortage in the long term. However, the shift, from ‘high touch low tech’ to ‘high tech low touch,’ needs to be handled carefully and strategically for a couple of reasons: first, this shift to technology, such as using human resources software instead of hiring managers or automated check-in procedures instead of human employees, will abolish one of the things that the industry is proud of, that 1 of 10 employees globally is employed in hospitality and tourism. Second, this shrunken societal impact may harm the traditional image of the industry in the eyes of communities and government bodies at any level: from local to regional, national to international. This shift might lead to the industry losing financial support and incentives from governments since the industry will not generate employment opportunities for certain social groups at different skill and income levels as much as it is used to for certain destination communities. Third, one more benefit of hospitality and tourism is for adolescents to learn convertible skills such as practicing courtesy and professionalism and learning how to communicate with customers and colleagues, which ultimately helps their personal development in the long run. Therefore, this shift from ‘high touch low tech’ to ‘high tech low touch’ needs a more comprehensive and sustainable approach, including financial and societal aspects.

Ontological issue. Switching ‘high tech low touch’ from the historical motto ‘high touch low tech’ creates a dilemma for the hospitality and tourism industry, where human appearance disappears. Dictionary definitions of hospitality specify human warmth, welcome, goodwill, friendliness, compassion, and connectivity. A recent example of this is the action of hospitality establishments to help, host, and feed refugees escaping from the war in Ukraine. This transformation needs to be well-planned to not lead it to the action of harakiri for the industry. Thus, ontological concerns should be addressed how to focusing on creating warm and

Table 1. (continued)

| N  | Authors          | Year | Title                                                                 | Journal                                      |
|----|------------------|------|----------------------------------------------------------------------|----------------------------------------------|
| 21 | Medai and Wu     | 2022 | A study of determinants that affect the intention to participate in online tours and the role of constraints under COVID-19 pandemic | Current issues in tourism                    |
| 22 | Molina-Collado et al | 2022 | Mapping tourism and hospitality research on information and communication technology: a bibliometric and scientific approach | Information technology and tourism           |
| 23 | Wan and Hsu      | 2022 | ‘Love’ or ‘hate’? TAM-guided frameworks of lecturers’ and students’ assessment of online teaching/learning | Journal of China tourism research            |
| 24 | Zheng et al      | 2022 | Do you trust digital health pass? Understanding tourists’ responses toward using health QR codes in pandemic travel | Journal of China tourism research            |
| 25 | Hao et al        | 2022 | The myth of contactless hospitality service: Customers’ willingness to pay | Journal of hospitality and tourism research   |
| 26 | Kim et al        | 2022 | The bright and dark sides of hotel kiosks: An empirical study         | Journal of hospitality and tourism insights   |
| 27 | Shen et al       | 2022 | Exploring the factors influencing the adoption and usage of augmented reality and virtual reality applications in tourism education within the context of COVID-19 pandemic | Journal of hospitality, leisure, sport and tourism education |
| 28 | El-Said and Aziz | 2022 | Virtual tours a means to an end: An analysis of virtual tours’ role in tourism recovery post-COVID-19 | Journal of travel research                   |
| 29 | ¨Ozekici and Küçükergerin | 2022 | The role of COVID-19 anxiety and social contact within technology readiness and acceptance model for virtual reality | Journal of vacation marketing                |
| 30 | Zhong et al      | 2022 | Technology acceptance before and after COVID-19: No-touch service from hotel robots | Tourism review                              |
| N | Author                | Design                     | Stat M       | Scale | Country  | Sample | Site                | Time                                | Tech                                    |
|---|-----------------------|----------------------------|--------------|-------|----------|--------|---------------------|--------------------------------------|-----------------------------------------|
| 1 | Kim et al. [2021b]    | A series of experimental studies: Four experiments | ANOVA        | Multiple: 7- and 5-point scales | The USA | Study 1A: 134 Study 1B: 134 Study 2A: 162 Study 2B: 171 Study 3: 113 Study 4: 150 | Amazon MTurk | Study 1A and 2A: Sept. 2020 Study 1B, 2B, 3, and 4: May and Jun 2020 | Robots and AI technologies |
| 2 | Zhao and Bacao [2020]  | Survey-based/ Cross-sectional | SEM.         | 5-Point likert scale | China | 532 valid FDA users | WeChat | Mar to Apr 2020 | Food delivery apps [FDAs] |
| 3 | Khanra et al. [2021]  | Survey-based/ Cross-sectional | SEM.         | 7-Point likert scale | India | 308 | Social media | 44,013 | Mobile payment services [MPS] |
| 4 | Kim et al. [2021a]    | Survey-based/ Multiple data collection | SEM.         | 7-Point likert scale | South Korea | 1st data collection: 320 before COVID-19 2nd data collection: 336 after COVID-19 | A survey company | 1st data collection: Feb 2018 2nd data collection: May 2020 | Drone food delivery |
| 5 | Cha [2020]             | Survey-based/ Cross-sectional including a pilot study | SEM.         | 7-Point likert scale | South Korea | Main study: 415 Pilot study: 30 | A survey company | Sept and Oct 2019 [pre-COVID-19] | Robots |
| 6 | Ivanov et al. [2020]  | Recommending future research | N/A          | N/A | Global | N/A | N/A | N/A | Automation technologies for biosecurity Virtual tours [VTs] |
| 7 | El-Said and Aziz [2022] | Survey-based/ Cross-sectional | SEM.         | 5-Point likert scale | Oman and Germany | 401 | 2 colleges | Apr to Jun 2020 | |
| 8 | Romero and Lado [2021] | Combining an experimental design [3 × 2] PLS | PLS-SEM       | 7-Point likert scale | Spain | 711 generation Z. [372 and 339] 6 scenarios | University | 1st data collection: May 2020 2nd data collection: Jan 2021 | Frontline robots |
| 9 | García-Milon et al. [2021] | Survey-based/ Multiple data collection | PLS-SEM       | 11-Point likert scale | Spain | 1800 tourists, [900 pre-COVID-19 and 900 during COVID-19] | 1st sample: Onset 2nd sample: ??? | 1st data collection: Nov 2018 2nd data collection: Apr to May 2020 | Smartphones |

(continued)
| No. | Author                                      | Design                  | Stat M                                                                 | Scale                  | Country       | Sample                                                                 | Site                          | Time                                      | Tech                                                   |
|-----|---------------------------------------------|-------------------------|------------------------------------------------------------------------|------------------------|---------------|------------------------------------------------------------------------|-------------------------------|-------------------------------------------|--------------------------------------------------------|
| 10  | Hong et al. [2021]                          | Survey-based/           | Study 1: A hierarchical multiple regression study 2: Multiple regression and an independent samples t-test | 7-Point likert scale  | The USA       | 700: 333 pre-COVID-19 and 367 during COVID-19                        | Amazon MTurk                 | 1st data collection: Jun 2019 pre-COVID-19 2nd data collection: Jul 2020 during COVID-19 | Online food delivery [OFD] |
| 11  | Hao [2021]                                  | Survey-based/           | Performance map analysis [IPMA] and PLS-SEM                           | 7-Point likert scale  | China         | 1779                                                                  | A survey company             | Nov 2020                                  | Contactless technology                           |
| 12  | Mejia et al. [2021]                         | Interdisciplinary       | N/A                                                                   | N/A                    | Global        | N/A                                                                   | N/A                           | N/A                                       | Wearable technologies                            |
| 13  | Gharibi [2020]                              | Literature review:     | Technology acceptance models                                          | N/A                    | Global        | N/A                                                                   | N/A                           | N/A                                       | Emerging technologies: XR and wearable devices            |
| 14  | Yang and Lee [2022]                         | Survey-based/           | PLS-SEM                                                               | 7-Point likert scale  | The USA       | 402                                                                   | Amazon MTurk                 | Jun 23–28, 2020                            | Adoption of shared accommodation and office services |
| 15  | Hao and Chon [2021]                         | Survey-based/           | The PLS-GMA using SmartPLS3                                           | 7-Point likert scale  | China         | 1537 hotel guests                                                     | Hong Kong-based consultancy company | Jan 2021                                  | Contactless hospitality services                   |
| 16  | Palumbo [2022]                              | Secondary data research | Parallel mediation analysis - ordinary least square [OLS] regression | N/A                    | Italy         | No human participants. Museums and cultural institutions Sample: 1088 | Cultural organizations' websites - | By ISTAT Mar to Oct 2020                      | Digital services                                    |
| 17  | Mason et al. [2021]                         | Survey-based/           | Fuzzy-set qual comparative analysis [fsQCA] and PLS-SEM              | 7-Point likert scale  | Italy         | 736                                                                   | Residents near four corporate museums | Oct 2019 and Feb 2020                      | Corporate museums' websites                        |
| 18  | Cheung et al. [2021]                        | Survey-based/           | SEM                                                                   | 7-Point likert scale  | China         | 547 - pre-COVID-19                                                   | At various fast-food restaurants | Pre-COVID-19                              | Mobile payment                                      |
| 19  | Rastegar et al. [2021]                      | Survey-based/           | SEM                                                                   | 5-Point likert scale  | Canada        | 415 participants                                                      | Amazon MTurk - Canada         | Winter 2018                               | Self-service kiosks                                 |
| 20  | Hao et al. [2022]                           | A discrete choice      | Hybrid choice model                                                   | 7-Point likert        | China         | 1939 Chinese hotel guests                                            | A professional market research company | In Dec 2020                             | Contactless hospitality services                   |

(continued)
| N  | Author                          | Design                          | Stat M  | Scale                | Country   | Sample | Site                       | Time                                      | Tech                                |
|----|--------------------------------|--------------------------------|---------|----------------------|-----------|--------|----------------------------|-------------------------------------------|----------|
| 21 | Özekici and Küçükergin (2022)  | Survey-based/Cross-sectional    | PLS-SEM | 7-Point likert       | Turkiye   | 300    | Online                    | May during the lockdown                  | Virtual reality                   |
| 22 | Zhong et al. (2022)            | A pseudo-experimental design    | PLS-SEM | 5-Point likert       | China     | Sample 1: 24 sample 2: 601| China's largest questionnaire platform [https://www.wjx.cn/] and reposting in WeChat groups and moments | Jan 2018 and after the outbreak of COVID-19 | Service robots |
| 23 | Zheng et al. (2022)            | Survey-based/Cross-sectional    | PLS-SEM | 5-Point likert       | China     | 1089   | A market research website [https://www.wjx.cn/] | 44,287                              | Health QR codes                      |
| 24 | Kim et al. (2022)              | Survey-based/Cross-sectional    | SEM and multi-group analysis | 7-Point likert | The US   | 630    | Qualtrics                  | No info                                  | Check-in/out kiosks                  |
| 25 | Molina-Collado et al. (2022)   | Bibliometric                    | N/A     | N/A                  | N/A       | 2424 publications (1988–2021) | Web of science [WOS] and SCOPUS databases | N/A                                   | Information and communication technology [ICT] |
| 26 | Shen et al. (2022)             | Survey-based/Cross-sectional    | PLS-SEM | 5-Point likert       | China     | 604 Chinese students      | WeChat and weibo                        | Feb 2021                             | Augmented and virtual reality        |
| 27 | Wan and Hsu (2022)             | Qualitative: Semi-structured interviews | Thematic coding | N/A                  | China     | 17 lecturers and 10 students | WeChat and QQ platforms                | Jun and Jul 2021                      | Online teaching/learning             |
| 28 | Medai and Wu (2022)            | Survey-based                    | CFA and the ordinal probit model | 7-Point likert | Japan    | 418    | Internet survey company   | Nov 30 to Dec 2, 2020                  | Video conferencing tools - online tours |
| 29 | Hwang et al. (2021)            | Survey-based/Multiple data collection | SEM    | 7-Point likert       | South Korea | Sample 1: [n = 320] before COVID-19 sample 2: [n = 328] after the outbreak of COVID-19 | Online survey company                      | Feb 2018 and May 2020               | Drone food delivery                  |
| 30 | Khan et al. (2021)             | Survey-based/Cross-sectional    | PLS-SEM | 5-Point likert       | Pakistan  | 387    | Google forms               | Jun to Sep 2020                         | Online education tech                |
inviting experiences for people even with less human involvement. The ultimate goal should be “high touch and high tech.”

Paradigm shift. We are not against technology adoption. However, our point is that it is not a simple action or transformation at a practical level. It is an existential shift (paradigm shift) for tourism and hospitality on a theoretical level. Thus, it should be managed more rigorously and strategically by the collaboration of the industry and academia. Adopting technology for supporting services and routine work may be a smart move and will open an avenue for customized and personalized services. However, replacing human welcome, warmth, friendliness, and goodwill with technology should be reconsidered, as it may come with service value and quality reduction in the long run. Meanwhile, timing is also an important phenomenon for major changes in business models. The general public may not be ready to accept technology-heavy hospitality services as a mainstream practice. Technology-intense (high tech low touch) hospitality business models may be regarded as a special practice/niche of hospitality concept and we recommend the term “hospi-tech.” Over time, with learned lessons, hospi-tech concepts can be integrated gradually into the field.

Loneliness. In addition to the issues discussed above, we must consider a dramatic shift to digitization in office work, remote work, and hybrid mode, which causes another issue for humankind at a global scale, “loneliness.” Developed societies have already faced this issue. British and Japanese governments, for example, have established ‘loneliness ministries’ to cope with this social phenomenon. With the emergence of loneliness, the world need more human warmth, welcome, goodwill, friendliness, and reception than ever. This emphasizes the importance of hospitality services as they provide an avenue where people meet their social interaction needs.

Future research suggestions

We identified a number of issues in our systematic literature review that may provide direction for future research. One of them is that there is no consensus on which theoretical concept is the base model for technology acceptance and use studies. unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) took eight theoretical models as references including theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), theory of planned behavior (TPB) (Ajzen, 1991), task-technology fit model (TTF) (Goodhue and Thompson, 1995), and technology acceptance model/2 (TAM/2) (Davis 1985; 1987; Davis et al., 1989; Venkatesh and Davis, 2000) to develop a model for technology acceptance and use in organizational contexts. Similarly, unified theory of acceptance and use of technology 2 (UTAUT 2) (Venkatesh et al., 2012; Venkatesh et al., 2016) was developed for technology acceptance and use in consumer contexts. TAM was developed based on TRA and TPB. However, the researchers who study acceptance and use of technology still go back to TRA and TPB, while TAM and UTAUT/2 were derived from these former two models. It is not clear why they make such choices. We recommend them for justifying their theoretical adoptions and having a purpose in creating a theoretical consensus on the acceptance and use of technology adoption literature. Moreover, deductive quantitative approaches lead certain theoretical frameworks to exist longer than their validity expiration (Kuczynski and Daly, 2003; Wan and Hsu, 2022). Technology adoption is a dynamic phenomenon. Inductive qualitative research may contribute to questioning existing theoretical concepts to test them and explore new dimensions and identify invalid constructs (Garvey and Jones, 2021; Green, 2014; Wan and Hsu, 2022). Additionally, we also draw attention to the scale points used in these studies. Even though some studies use the same and similar constructs, they use different Likert scale points (5, 7, and 11). The use of these different scales should be addressed and justified as well.

Employees’ intentions

It is crucial to identify underlying components of customers’ intentions toward technology adoption in the context of hospitality and tourism. However, perceptions of employees toward technology adoption in hospitality and tourism are as important as consumer perceptions because they work in these technology-oriented servicescapes. Unfortunately, we have not come across any data-based study aiming to capture employees’ intentions toward technology adoption in workplaces. Thus, we encourage researchers to study the behavioral intentions of hospitality and tourism employees toward technology adoption in servicescapes as well as consumers’ intentions.

Theories for employee intentions

We should remember that major technology acceptance theories like TAM and UTAUT were the
| N | Authors | Purpose | Theory/model | Constructs and concepts | Findings |
|---|---------|---------|--------------|------------------------|----------|
| 1 | Kim et al. (2021b) | To investigate if consumers have preference over one another (robot-staffed or human-staffed) during COVID-19 period | Rational choice theory: Cost-benefit value maximization | Risk of COVID-19 (high vs low), subjective perceived threat (moderator), concerns on safety and social distancing, evaluation of robot-staffed hotel | Robot-staffed hotels were preferred over human-staffed hotels during the COVID-19 in comparison with before COVID-19. The moderating role of perceived threat in consumers’ choices in times of severe crisis |
| 2 | Zhao and Bacao (2020) | To examine factors affecting users’ continuance intention of using food delivery apps during COVID-19 period | Integrating UTAUT, ECM and TTF with the trust factor | Performance expectancy (PE), effort expectancy (EE), social influence (SI), trust (TR), perceived task-technology fit (TTF), confirmation (COF), satisfaction (SA) and continuance intention (CI) | Users’ continuance usage intention was determined by their technological and mental perceptions |
| 3 | Khanra et al. (2021) | To investigate how security concerns moderate the relation between constructs of innovation resistance theory and adoption postponement of mobile payment services (MPS) use | Extending the innovation resistance theory by including two behavioral measures [privacy concerns and visibility] and a moderator [security concern] | Usage barrier, value barrier, risk barrier, tradition barrier, image barrier, privacy concerns, visibility, security concerns (moderator), and adoption postponement of MPS usage | The crucial factors were identified: Usage barrier and image barriers, privacy concerns, and visibility. Security concerns significantly moderated the association between image barriers and MPS adoption postponement in the hospitality sector |
| 4 | Kim et al. (2021a) | To examine the formation of behavioral intentions in the drone food delivery services context through an extended TPB | TPB + perceived innovativeness | Perceived innovativeness, attitude, subjective norm, perceived behavioral control, behavioral intentions | Perceived innovativeness positively affected attitude. Behavioral intentions were affected by attitude, subjective norm, and perceived behavioral control. The outbreak of COVID-19 played a moderating role in the relationship between attitude and behavioral intentions |
| 5 | Cha (2020) | To test an integrated theoretical model by defining customers’ intention to use services of restaurant robots | TPB, motivated consumer innovativeness (MCI), and coolness | (Mci): Functionally fMCI, socially sMCI, and hedonically hMCI; utility; attractiveness; subcultural appeal; originality; attitude; intention to use; perceived enjoyment; perceived trust; perceived risk | hMCI and sMCI had positive effects on attitude and were enhanced by attractiveness, utility, subcultural appeal and originality. The relationship between MCI and attitude differed among age groups |

(continued)
| N | Authors                          | Purpose                                                                 | Theory/model                                                                 | Constructs and concepts                                                                 | Findings                                                                                           |
|---|---------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 6 | Ivanov et al. (2020)            | To discuss the role of automation technologies in travel, tourism, and hospitality (TTH) to mitigate biosecurity threats to the tourism economy while taking health and safety risks due to COVID-19 into consideration | A supply-side perspective biosecurity, crisis management, and automation technologies in tourism | It suggested a future research agenda: [e.g. RQ1: Do biosecurity threats (viral pandemics like COVID-19) play a role in the acceptance of automation technologies by tourists, managers, and employees? RQ2: Do automation technologies improve the competitiveness of TTH companies during and after viral pandemics?] |
| 7 | El-Said and Aziz (2022)         | To determine the factors that affect a person’s decision to adopt virtual tours (VTs) as temporary alternatives during COVID-19 | Integrating TAM and protective action decision model (PADM) PU, PEU, enjoyment, hazard related attributes, risk perceptions from COVID-19, intention for an actual visit | The antecedents of the TAM and PADM models were effective in predicting users’ intention to adopt VTs and that adoption intention had a positive impact on the tendency to visit the actual site (not a substitution of an actual site visit) |
| 8 | Romero and Lado (2021)          | To analyze guests’ perceptions [gen Z] about robots’ COVID-19 prevention efficacy and their impact on booking intentions | Combining preventive health, robotics, and hospitality literature Health history, health importance, perceived susceptibility, prevention efficacy, attitude, booking intentions, social presence, anthropomorphism, control (time period) | Gen Z perceived that robots reduce contagion risk at hotels. Robot anthropomorphism increased perceived COVID-19 prevention efficacy, regardless of the context where the robots are employed. Robots’ COVID-19 prevention efficacy stimulated better attitudes and higher booking intentions |
| 9 | García-Milon et al. (2021)      | To examine the moderating effect of the COVID-19 syndemic on acceptance and use of smartphones during the tourist shopping journey | The scale is based on the UTAUT model of Venkatesh et al. (2003) and on the pleasure and arousal variables of the PAD model (Mehrabian and Russell, 1974) Performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), pleasure (pl), arousal (ar), intention to use smartphone | Tourists have increased their intention to use smartphones, especially to make payments for purchases during COVID-19 |
| N  | Authors | Purpose | Theory/model | Constructs and concepts | Findings |
|----|---------|---------|--------------|-------------------------|----------|
| 10 | Hong et al. (2021) | To investigate predictors affecting customer intention to use online food delivery (OFD) services amid COVID-19 | TAM with additional constructs of TR, PSB, TSB, and FSRP (study 1) | Study 1: Six predictors: perceived usefulness (PU), perceived ease of use (PEOU), price saving benefit (PSB), time-saving benefit (TSB), food safety risk perception (FSRP), and trust (TR) and customer intention to use (CIU) | Study 1: All of the predictors except food safety risk perception significantly affected OFD usage intention and no moderation effect of COVID-19 |
| 11 | Hao (2021) | To explore the determinants of customers’ acceptance and use of contactless services | UTAUT2 [without ‘habit’ construct] with optimism and trust | Study 2: Extending the model by adding customer perceptions of COVID-19 [perceived severity (PS) and vulnerability (PV)] during the pandemic | Study 2: Perceived severity and vulnerability have no significant impact on OFD usage intention, but socio-demographic variables altered effects during COVID-19 |
| 12 | Mejia et al. (2021) | To provide critical analysis of the literature in the area of hotel housekeeping safety and health through the lens of the TTF model | Task-technology fit (TTF) model | Technology, task, user characteristics and/or attitudes, employee’s adoption of technology, performance benefits | This study contributed to the existing literature on hospitality service innovation and technology acceptance by incorporating UTAUT2 with optimism and trust. It provided justification for the use of wearable devices to improve safety and health-related outcomes for housekeepers. It suggested more holistic approaches than baseline strategies for front-line employees’ safety in considering COVID-19 implications |
| 13 | Gharibi (2020) | To inquire about the predictive technology acceptance models and their evolution in the tourism context | Technology acceptance models (TAM/2, UTAUT/2, TPB, TRA) | N/A | The author recommended novel approaches in technology acceptance literature including affective and hedonic factors such as flow; innovative factors; post-acceptance phase; emotion and technology relationship; the dark side of technology and barriers of technology acceptance such as distracted attrition, user’s resistance to technology |
| N  | Authors                  | Purpose                                                                                                                                                                                                 | Theory/model                                                                                                                                  | Constructs and concepts                                                                 | Findings                                                                                                                                                                                                                                                                                                                                 |
|----|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | Yang and Lee (2022)     | To shed light on how the perceived physical risk of COVID-19 influences users’ decisions to adopt shared accommodation and office services                                                                 | Proposing a new integrated research model based on TPB and TAM, with the constructs of trust and perceived physical risk                      | TPB and TAM: PU, PEOU, attitude, subjective norm, perceived behavioral control, and continuance intention to use shared accommodation and office space with trust and perceived physical risk | Perceived physical risk negatively affected TPB, TAM constructs, and trust. Perceived usefulness and perceived ease of use fully mediated the effect of perceived physical risk on attitude. This study empirically revealed current users’ concerns about COVID-19, which has reduced the use of sharing services |
| 15 | Hao and Chon (2021)      | To explore the antecedents (customer experience and customer delight) and consequences (trust) of customer equity in the context of contactless hospitality services and the moderation effect of health concerns between customer equity and trust in contactless hospitality services among high and low technological readiness of hotel guests | A theoretical model is proposed to investigate the antecedents and consequences of customer equity. The health concerns related to COVID-19 are employed as a moderator | EX = customers’ experience of contactless technologies; DE = customer delight; VE = value equity; BE = brand equity; RE = relationship equity; TR = brand trust | The effects of customer delight on equity and equity on trust were greater for the low technology readiness group. Customer equity was a higher-order construct including brand, value, and relationship equity. Among them, relationship equity was the most influential determinant, while value equity was the least influential. The contactless hospitality service had a significant positive impact on customer equity for all three groups. The health concerns related to COVID-19 moderated the relationship between customer equity and trust for the pooled sample and the high readiness group |
| 16 | Palumbo (2022)           | To provide evidence of digitization’s effects on museums and cultural institutions’ attractiveness                                                                                                    | Digitization concept, insights from the media richness theory                                                                               | Digitization, digital services for physical visitors, digital services for virtual visitors, organizational attractiveness | Digitization enhanced organizational attractiveness (OA) directly and indirectly via the delivery of digital services to physical visitors |
| N  | Authors                  | Purpose                                                                 | Theory/model                                                                 | Constructs and concepts                                                                 | Findings                                                                                                                                 |
|----|-------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 17 | Mason et al. (2021)     | To identify the website elements that affect users’ intentions in the context of corporate museums | TRA and website qualities                                                     | Website usability (WU) and promotion (PROM) adapted from Agarwal and Venkatesh (2002) and Tung et al. (2009); website aesthetics (AEST) derived from lavie and Tractinsky (2004); social norms (SNORM) derived from pavlou and Fygenson (2006); the attitude (ATT) built following Ajzen’s (2002) recommendations; intention to visit the CM (IVM) and intention to visit the CM website (IVWS) drawn from Pavlou and Gefen (2004) | The digital environment and the social context factors were influential on the intention to visit a corporate museum |
| 18 | Cheung et al. (2021)    | To analyze the rapid development of mobile payment in the fast-food restaurant industry and its effect on consumer behavior | Self determination theory, intrinsic and extrinsic motivations, and satisfaction | Perceived usefulness, perceived enjoyment, perceived security, perceived privacy, service content quality, Navigation and visual design quality, management and customer service quality, system reliability and connection quality, and continuance intention | Motivation (M) and satisfaction (S) had significant effects on the continuance intention of mobile payment usage. PE of intrinsic M had a greater impact than satisfaction on continuance intention. Participants were more satisfied with PSQ and less satisfied with perceived privacy and security. PE and PSQ can induce continuance intention to use mobile payment in fast-food restaurants |
| 19 | Rastegar et al. (2021)  | To investigate factors influencing the customers’ decision to use self-service kiosks in quick service restaurants | Incorporating TAM, satisfaction model, and customer satisfaction components (PV, satisfaction, and behavioral intention) | Trust, self-efficacy, perceived ease of use, perceived usefulness, perceived enjoyment, perceived value, satisfaction, and behavioral intention | Self-efficacy had a positive and significant effect on PEOU and PU not on PE. Trust was positively related to PU and PE but not with PEOU. An insignificant relationship between PU-SAT and PU-PU was found. (PU → PE) |
| 20 | Hao et al. (2022)       | To examine willingness to pay (WTP) for contactless hospitality services | —                                                                               | WTP, technology readiness index (TRI), optimism (OPT), innovativeness (INN), discomfort (DIS), and insecurity (INS) | Customer demographics, hotel attributes, hotel scale, travel-related variables, technology readiness, and health concerns were influential on WTP. |
| N | Authors                          | Purpose                                                                 | Theory/model            | Constructs and concepts                              | Findings                                                                                     |
|---|---------------------------------|------------------------------------------------------------------------|-------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 21 | Özekici and Küçükergin (2022)   | To extend the TRAM within the context of tourism and virtual reality (VR) considering social contact and COVID-19 anxiety | TRAM and TAM            | Attitude, intention, perceived usefulness (PU), perceived ease of use (PEOU), social contact, technological readiness | COVID-19 anxiety had a significant effect on attitude while social contact did not. Also, technological readiness was a determinant of PEOU and PU of VR. |
| 22 | Zhong et al. (2022)              | To explore differences in acceptance of robots by customers in hotels before and after COVID-19 | Technology acceptance   | Perceived usefulness, ease of use, social influence, attitude, value, and anthropomorphism | COVID-19 increased hotel guest acceptance of robots                                           |
| 23 | Zheng et al. (2022)              | To investigate tourist confidence, trust, and behaviors toward health QR codes at travel | Trust, confidence, and cooperation model (TCCM; Siegrist et al., 2003) | Privacy risk, perceived efficacy, and security       | Knowledge, privacy risk, perceived efficacy, and security affected trust in health QR codes |
| 24 | Kim et al. (2022)                | To inquire factors influencing using a check-in/out kiosk in a full-service hotel | TAM                     | Techno stressors, perceived ease-of-use, perceived usefulness, and intention | Techno stressors (work overload and role ambiguity) significantly influenced intention to use a check-in/out kiosk |
| 25 | Molina-Collado et al. (2022)     | To synthesize the academic literature concerning 'technology and ICT' in tourism and hospitality | TAM and UTAUT           | Satisfaction and trust                                | The major research themes were identified including TAM, e-word-of-mouth, user-generated content, self-service technologies, robotics, smart tourism, virtual reality, and trust in technology |
| 26 | Shen et al. (2022)               | To study antecedents of acceptance of AR and VR in tourism education during the pandemic | TAM                     | Intention, usefulness, price value, and hedonic motivation | It extended TAM theory                                                                        |
| 27 | Wan and Hsu (2022)               | To compare views of lecturers and students on online teaching/learning in hospitality and tourism bachelor programs | TAM                     | PU, PEOU, attitude, intention, and actual behavior  | A 'love and hate' framework was proposed                                                      |
| 28 | Medai and Wu (2022)              | To examine influential factors on consumer intentions toward online tours | N/A                     | Authenticity, telepresence, and travel constraints    | Participation intentions toward online tours were influenced by telepresence and positive emotions |

(continued)
| N  | Authors          | Purpose                                                                 | Theory/model                                           | Constructs and concepts                                                                 | Findings                                                                                                                                 |
|----|------------------|-------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 29 | Hwang et al. (2021) | To determine the role of motivated consumer innovativeness and moderating role of COVID-19 on drone food delivery services | Motivated consumer innovativeness (MCI)               | Functional, hedonic, and social motivations, cognitive motivation, attitude, and intension | Attitude toward drone food delivery services was affected by functional, hedonic, and social motivations. The relationship between functional motivation and attitude was moderated by COVID-19 |
| 30 | Khan et al. (2021)  | To reveal perceptions of students on the role of technology in online education during the pandemic | TAM and innovation diffusion theory (IDT)            | PEU, compatibility, computer self-efficacy, relative advantage, perceived usefulness, and online learning experience | Technology in online education played a recreational role from students’ perspectives while computer self-efficacy and relative advantage were a curse during the pandemic |
Theoretical models originally designated to measure employees’ intentions toward technology adoption in organizational contexts, not customers’ perceptions in a consumer context. Only UTAUT2 was the first theoretical model devoted to examining end-users/customers’ behavioral intentions toward technology in a consumer context with an extension of UTAUT. Therefore, a similar theoretical foundation to customer studies can be applied to employee studies pertaining to behavioral intentions toward technology adoption.

Technology adoption is not a single stage. Acceptance is the initial stage of it. Use, continuance use, barriers, and resistance to technology adoption should also be studied and underlying structures should be revealed. For each stage and situation, different theoretical conceptualizations may be required.

Technology is a broad concept. It represents a wide spectrum: software to information systems (e.g. QR codes), digitization to automation/robotics, artificial intelligence to blockchain, machine learning to immersive media (VR, AR, MR, and XR), and more. Attempting to develop an overarching theoretical model to explain behavioral intentions toward every single technology adoption may not be feasible. Different technologies may require different conceptualization and modeling.

Perceived enjoyment is one of the constructs utilized in the theoretical models. Perceived enjoyment would make sense for more complex technology adoptions as these technologies may not be easy to learn how to operate and interact with, like smart tables, service robots, etc. However, using kiosks at fast-food restaurants and expecting a fun experience does not seem realistic. Relatedly, the high-level hedonic motive for such a technology providing a supportive service may not be required. The motivation to use new technology cannot always be about hedonism. Utilitarian aspects should be valid. Particularly, for older generations, overcoming a challenge to learn how to operate technology may include an integral enjoyment of completing a task. Relatedly, perceived enjoyment is not steady in the literature. Some studies found perceived enjoyment significant for older generations’ acceptance of human-like robots and others found perceived enjoyment is a significant factor for younger generations’ acceptance of technology in another adoption domain. Therefore, we recommend considering perceived interaction, engagement, and involvement constructs.

The mindset of individuals becomes a factor in behavioral intentions toward technology adoption. If users have a growth mindset, as opposed to a fixed mindset, and enjoy learning new things, they may be more willing to accept new technologies. This opens another avenue for future research to focus not only on technology characteristics but also on user characteristics. In general, age/generation and gender are used to represent this user-related dimension. These factors are shallow even though they seem to make sense at first glance. However, researchers should extend their lenses beyond age and gender with personality traits, cultural background, technology savvy-ness, personal innovativeness, and extraverted-introverted spectrum, which may lead to more convincing and promising findings. For instance, Hao and Chon (2021) used the technological readiness of individuals to assess behavioral intentions of technology use. We recommend researchers revisit the seminal work of Rogers pertaining to user characteristics in the theory of innovations’ diffusion (Rogers, 1962, 2003) to obtain some insights on the role of users in technology adoption.

It was revealed that one-time data collection (cross-sectional) and convenient sampling are common practices. One-time data collection to examine certain phenomena with a convenient sample may not be enough. For instance, customer perception toward technology adoption may have multiple stages (e.g. resistance, acceptance, use, continuance use). Relatively, almost all research articles suggested that future studies conduct longitudinal and/or experimental research, as only a few of the current studies had multiple data collection procedures. Even though researchers are aware of the value of longitudinal studies and experimental research, they refrain from conducting longitudinal and experimental research. We link this issue with the current pressure in academia to ‘publish or perish,’ and the increasing demand for funding for longitudinal research projects. These conditions may push researchers to conduct cross-sectional studies for quicker publications. Tenure-track evaluation systems may be modified in favor of longitudinal studies. For instance, longitudinal research may be counted as two publications. Additionally, some studies did not seem as transparent as they should have been regarding data collection outlets where they collected their samples. For instance, Hao and Chon (2021) stated that a Hong Kong-based survey company collected the data for the study; however, did not specify the name of the company. Other studies like Mason et al. (2021), Palumbo (2022), and Rastegar et al. (2021) specified the museums and/or platforms (MTurk, Qualtrics, and others) as data collection sites.

Technology adoption decisions are not solely about the intentions of consumers or managers. The technology-related research papers should be able to provide insights and discuss technology adoption from other aspects and their impacts (e.g. financial aspect: cost; social aspect: job loss). Therefore, collaboration
with researchers in other areas is encouraged to increase the comprehensiveness and impact of research articles.

Unclear use of several robot-related terminologies was revealed: anthropomorphism, human likeness, and humanoid. In this systematic literature review, we could not obtain a clear distinction between each; it was not clear in the articles which concept is used for physical human traits like having an arm, and which concept is used for emotional attributes like gestures. It is important to eliminate the misuse of these terms. We highly recommend making this issue resolved for future research to be able to make clearer conclusions from research findings.

At the end of the day, hospitality is a field of business. Cost-benefit analysis is an essential component in technology adoption decisions for managers and capital investors. The cost of these technology investments will be reflected in service prices to customers. Technology adoption, at least, will have an initial investment cost for businesses. Therefore, willingness to pay (Bagozzi, 1992) and price value (Venkatesh et al., 2012) constructs should be included in theoretical models to investigate customers’ behavioral intentions towards technology adoption in servicescapes.

The contexts in which technologies were implemented were limited to mainly accommodations, food services, and museums. However, as hospitality and tourism are broader than these, future studies may therefore diversify settings and other servicescapes where technology is implemented: transportation spaces like airports and train stations, in addition to, event settings like festivals, conferences, and business meetings. Moreover, technologies like robots, drone food delivery, and kiosks that have already been investigated should be studied in different sub-contexts like robots in front desk services or robots in food services. Even sub-categories in technology applications such as human-like and non-human-like robots should be distinguished to identify more detailed underlying mechanisms in technology acceptance and use intentions.

Suggestions for the industry and academia

Hybrid designs should be encouraged. The studies show that generations, personality features, and different segments (low readiness and high readiness) may have different perceptions toward technology adoption. Therefore, service establishments should be able to mutually provide technology-based and human interaction options to be able to serve all customer segments.

One of the long-lasting issues is the gap between academia and industry. Each camp in its own ecosystem has been working to improve services in hospitality and tourism. However, in this fast-paced transformation, academia and industry need to work more closely than ever. The hospitality ecosystem has been going through a critical transformational period from ‘high touch low tech’ to ‘low touch high tech.’ We believe one of the things academia can initiate to narrow the gap between academia and industry is to include industry people in the peer-reviewing process. This initiative may help to shrink the language barrier and thought process differences between the academic circle and industry. This inclusive approach can bring both camps to work collaboratively to improve hospitality services and education. This collaborative work may eventually lead to greater customer satisfaction and higher revenue generation in the long run. Industry people may critique practical implications or any other relevant section of an article. Participation in the review process may be elevated as a prestigious thing over time for industry people who like to climb the career ladder.

Academic work cannot divorce itself from real life. It should create utilitarian value as well as academic merit. Otherwise, who can claim academic merit for a study without utilitarian value? The current situation in academia reminds us of the French expression from the 19th century, “for l’art pour l’art,” (Art for Art’s Sake). Academia cannot have this luxury as art to solely serve for its own benefits. Academic work should be for the sake of both academia and society. An applied discipline such as tourism and hospitality especially cannot disregard practical implications.

Conclusion

With COVID-19, technology adoption has gained momentum. This momentum is expected to increase and have experienced the benefits of technology and these benefits now facilitate modern life. The recent Munich security conference 2022 discussions made it clear that future pandemics are still valid threats to humankind. We need to be on guard, as U.S. President Biden stated at the 2022 State of the Union Address. Thus, contactless technologies maintain their importance for the future everywhere including in hospitality and tourism services. Researchers in hospitality and tourism should continue to investigate technology adoption, acceptance, and use phenomena to provide theoretical and practical implications. On a similar note, hospitality and tourism programs within higher education institutions should align their curriculum with recent developments regarding technology adoption in servicescapes. Educators should make sure their graduates are technologists who know where and how to implement technology in their service settings.
On the other hand, the core value of hospitality services is human warmth. There should be a balance between technology adoption and human welcome/reception. We have been moving to more technology-oriented life forms; however, our feelings and emotions are still important. For hospitality services, evaluation of service quality and customer satisfaction are still related to touching emotions and feelings of customers. Therefore, careful and comprehensive service designs are vital for the future of hospitality and tourism.

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