African Journal of Hospitality, Tourism and Leisure. ISSN: 2223-814X

December 2023, Vol 12, 5SE, pp. 1773-1784

The Adoption of New Technological Advancements to Build Resilience in Hotels

Itumeleng Henry Tiso
School of Tourism and Hospitality, University of Johannesburg, South Africa, Email, itumelenghenry@gmail.com

Akhona Neliswa Melani
School of Tourism and Hospitality, University of Johannesburg, South Africa, Email, akhonam@uj.ac.za

Corresponding Author

How to cite this article: Tiso, I.H. & Melani, A.N. (2023). The Adoption of New Technological Advancements to Build Resilience in Hotels. African Journal of Hospitality, Tourism and Leisure, 12(5SE):1773-1748. DOI: **https://doi.org/10.46222/ajhtl.19770720.465**

Abstract

The hotel industry was in a fight for survival during the COVID-19 pandemic. To emerge resilient from the pandemic's long-lasting impacts, the hotel industry needed to review, innovate and transform hotel operations. The prospects of recovery for hotels among other elements were underpinned by the integration of new technological advancements to aid the sustainability of the hotel business. This study was based on responses from 4 and 5-star hotel employees in Gauteng, South Africa to investigate the extent to which hotels had adopted and accepted new technological innovations to reduce the impact of the pandemic. The study is quantitative and the data was collected online, using Google Forms, attaining 103 useful questionnaires. The findings show a significant correlation between the pandemic inciting a change in hotel operations and the integration of technological innovation in hotels to ensure sustainability. This is seen through a statistically significant mean (M=4.06). Further affirming the significance of the use of technology in hotels to emerge resilient from a pandemic. Lessons from the recent pandemic and this study can form a critical foundation for hotels to adapt to external demands, integrating new technologies and sustainable strategies for survival. The findings also allude to employees' acceptance of new technological advancements and their willingness to use them. Challenges and recommendations for future research are also discussed.

Keywords: Hotels; innovation; resilience; sustainability; technological advancements

Introduction

Pandemics have drastically affected the hospitality industry, including hotels and resorts worldwide (Bello & Bello, 2021). Such unforeseen disasters significantly negatively impact hotels' economic sustainability due to decreased occupancy and revenue (Subedi & Kubickova, 2023). The unprecedented nature of such crises calls for the need for hotels to develop and implement new robust strategies to improve their resilience and ensure sustainability during pandemics (Gaur et al., 2021). Building hotel resilience involves establishing measures that will enable hotels to withstand the effects of a pandemic while maintaining operations and serving their guests' needs (Brown et al., 2017). To emerge resilient from the pandemic's long-lasting impacts, the hotel industry needed to review, innovate and transform hotel operations (Khan & Hashim, 2020). The prospects of recovery for hotels among other elements were underpinned by the integration of new technological advancements to aid the sustainability of the hotel business (Colmekcioglu et al., 2022). The sudden outbreak of COVID-19 forced the hospitality industry to change how establishments deliver services to their guests (Bartik et al., 2020), shifting from a high-touch service offering to a low-touch and high-tech service offering with the aid of technological advancements (Hao, 2021). Rahimishian and Irani (2020) state that the use of technological advancements increases the value of the hotel by reducing human-to-human contact which helps protect guests from being exposed and infected with the virus.

Gursoy and Chi (2020) mention that some of these technological advancements may include motion sensors, voice recognition, robotic services, face recognition technology and cameras. However, the most common and popular technology is the use of smartphones, which consists of smart applications that guests can download to use for information regarding the property concierge recommendations, room assistance such as check-in and check-out, digital payments, housekeeping, and maintenance issues (Kim et al., 2012).

The COVID-19 pandemic hit the very essence and nature of hotel service operations (Rivera, 2020), which is to craft unique guest experiences fostered by high contact and personalised interactions between guests and staff (Lukose et al., 2023). The pandemic accelerated the need for contactless service options through the adoption of new technological advancements in hotel operations (Rodriguez-Anton & Alonso-Almeida, 2020; Sigala, 2020). To mitigate the spread of the virus, hotels integrated technology into their operations to remain operational while ensuring the safety of guests and staff (Lukose et al., 2023). The move towards technology facilitated recovery and resilience for hotels through the digitalisation of most processes, including check-ins, payments, and room service, thus reducing contact and creating a safer guest experience (Gossling et al., 2020; Lukose et al., 2023). The incorporation of technologies further enhanced the guest experience and confidence in hotels by offering convenience, minimising human contact, and improving hygiene (Pillai et al., 2021). The study of resilience has grown in importance in recent years as people have become more aware of the implications of natural and man-made calamities (Ruis-Martin et al., 2018). However, according to Ntounis et al. (2022), there has been little research evaluating the hotel industry's resilience to the effects of COVID-19 in comparison to other businesses. Given the economic significance of the hotel industry, strategies for resilience to mitigate pandemic impacts must be implemented to aid hotels in their sustainability and recovery (Rodriguez-Anton & Alonso-Almeida, 2020). Therefore, the adoption of new technology and innovative sustainability strategies in hotels represents a promising pathway towards greater resilience and recovery for the hotel industry (Lukose et al., 2023). It is therefore crucial to examine the level of acceptance of technological advancements in hotels during a pandemic or crisis. To achieve this, the Technology Acceptance Model (TAM) was employed to determine the perceived usefulness, ease of use and intention to use the technology (Davis, 1989). For the context of this study, 4 and 5-star hotels in the Johannesburg area were used to further understand the behaviour of hotel guests towards technological advancements.

Literature review

Changes in the hotel industry

It is critical to note the severity of the pandemic's impacts, which exposed the tourism and hospitality industry’s lack of resilience when compared to other industries (Gossling et al., 2020). It is crucial to understand how the hospitality industry has changed because of COVID-19 and the measures taken to adapt. To mitigate the impact and effects of highly disruptive external factors such as pandemics adequately, businesses should formulate and implement contingency plans and strategies for the sustainability of the organisation (Garrido-Moreno et al., 2021). The development of these strategies is critical for facilitating recovery from adverse events by preserving and rebuilding a positive image for hotels (Kim et al., 2008). Contingency planning and strategy development intend to assist hotels in prevailing against abrupt threats and enable resilience in the long haul (Leung & Lam, 2004). The pace of technological change is increasingly varied across different industries. The hospitality industry is adapting swiftly to the disruption of advanced technologies. The development of modern technologies has led to changes in the tourism and hospitality-related market that are viewed from both the product/service offering and the guest demand perspective (Januszewka et al., 2015). Law and

Jogaratnam (2005) suggest that it is critical for hoteliers to use advanced technologies to improve service quality. Improving technological knowledge for all hotel employees may assist in achieving the desired quality of service. However, hotels typically lag other sectors in adopting advanced technology (Buick, 2003).

The advent of Web 2.0 is fundamentally changing travel information search and destination selection processes (Lo et al., 2011); new technology provides easy access to a wealth of tourist information (Rodriguez et al., 2012); the increased availability of smartphones and mobile devices has changed tourism, and will continue to improve the way visitors enter information while travelling (Jung et al., 2015); search engines are one of the most common sources of information, and PCs are the most common devices for both search and booking (Murphy et al., 2016). Therefore, the hotel industry must adapt.

TAM

The hotel industry is characterised by its service delivery to clients, and technological advancements have moulded the industry and influenced most hotels to incorporate technology in their service. The TAM, which was proposed by Davies (1989), explains the behavioural intentions of customers and the usage of technology, it gives an idea of the fundamental proportion of different customer behaviour referring majority to the determination to use the proposed technological advancements. According to Pai and Huang (2011), TAM was invented to forecast customers' intentions towards the use of technological advancements per their beliefs about technology, whereby the attitude of customers towards technology serves as the intermediary. Lee et al. (2003) identify the TAM as a predictive model that establishes connections between information technology and is subject to further expansion due to technological advancements. Venkatesh and Davis (2000) state that the TAM suggests that the most important circumstances/factors of technological acceptance and behavioural intentions are perceived ease of use, usefulness, and the attitude of customers. Researchers who studied TAM suggested that perceived usefulness and ease of use are presented as having a direct outcome on behavioural intentions about information technology but excluded the difference of attitude due to it being a frail determinant of behavioural intention such as smartphones (Agrebi & Jallais, 2015). Davis (2003) mentioned that customers' usage and their acceptance of technology depend on the conceptual construct of perceived usefulness and ease of use, proposing the expulsion of the attitude construct in the TAM.

The TAM has been extended over the past years to include additional variables that give a clear understanding of customer behaviour, supported by various factors such as the quality of the information system (Kim et al., 2008), the technology experience (Rivera et al., 2015), previous technological experiences (Venkatesh & Morris, 2000), the customers' emotions (Lee et al., 2012), and the perceived risk and security (Morosan, 2011). A study conducted by Castaneda et al. (2007) recommends that the experience factor is pivotal to the client's interaction with technological advancements to a degree that clients enjoy the experience, this was proven by Li, Dong, and Chen (2012) to be a great influence on results associated with the usage and acceptance of technological advancements. About apps that are being used by customers in hotels, it was determined that the indicators of behavioural intention suggest that customer values based on the experience they have had a great and important part in influencing intentions to make use of these technological advancements (Wang et al., 2013). However, it is being debated by Wu et al. (2011) that the TAM is too cheap for explaining the adaptation of technology across multiple industries, and that includes the hospitality industry. To address this shortcoming, multiple extensions of the TAM have a great theoretical foundation regarding technology most especially in many hotel services.

Perceived usefulness is explained as a level at which an individual is convinced that the use of specific technological advancements would enhance and make their performance much more convenient (Davis, 1989). Perceived usefulness is important to a hotel's technological acceptance (Christou & Kassiandias, 2002). Premkumar et al. (2008) state that customers will accept technological advancements that have proved to be useful. In hotels, efficient mobile systems assist guests in performing certain duties such as checking in without any contact person helping, and getting room cards on their smartphone easily, and the mobile systems even help guests conduct payments online with either a smartphone, tablet, or computer (Morosan, 2011). An investigation that was conducted by Özkan (2022) and Kim et al. (2008) indicates that technological tools in hotels are of critical importance. Özkan (2022) explains that a hotel's operation is departmentalised into four sections, namely the food and beverage department which includes restaurants and banqueting management systems, front-office applications, back-office applications and guest-related applications. These departments form the hotel's information technological application. Considering that the technological applications need an individual to make use of them, this also leaves a gap in understanding both the service personnel and the customers (Kim et al., 2008).

Research methods

The study employed a descriptive, quantitative research design, with the targeted population being hotel employees from 4 -5-star hotels in Gauteng, South Africa. Specifically in the northern suburbs of Johannesburg, mainly Sandton and surrounding areas as well as Rosebank. Geographically, these areas offer a decent variety of 4 and 5-star hotels that may attract the need for technological advancements. The study focused on 4 and 5-star hotels as luxury hotels tend to compete more based on creativity and innovation. Also, 4 and 5-star luxury hotels appreciate that technological innovations are critical drivers of service innovation efficiency (Yao et al., 2022). The study focused mainly on hotel employees in departments that made use of technology such as the front office, events and banqueting, rooms division as well as the restaurant. The study investigated the extent to which hotels had adopted and accepted new technological innovations to reduce the impact of the pandemic**.** The empirical data was collected through an online questionnaire survey using the Google Forms platform. While considering the existing body of knowledge in the field, the questionnaire was developed with consideration of previous studies conducted in the field, however keeping in mind the South African context and the novelty of the study of resilience in the hotel sector in the face of COVID-19.

The questionnaire focused on, a) the demographic profiles of the respondents, b) their evaluation of the influence of COVID-19 on hotel operations, c) the adoption and use of technological advancements, and d) the challenges experienced with the implementation and use of the technological advancements in their respective hotels.

A convenience sampling approach was used to target employees from 4 to 5-star hotels in Gauteng. The convenience sampling approach refers to samples that are selected from the population because they are conveniently available for the research, it was best suited for the study as it was convenient to attain the samples cost-effectively (Creswell, 2014). Before the study was carried out, ethical clearance was obtained, and the participants received a letter of informed consent explaining the nature of the study, voluntary participation, and the option to opt out. A total of 103 valid questionnaires were solicited from hotel employees. The Statistical Package for Social Sciences (SPSS) software, v27.0 was used to process the data obtained from the questionnaire. Descriptive statistical percentages for the frequencies involved were used to present the data obtained from the respondents.

To ensure the reliability of the data, Cronbach's alpha was employed to assess the internal consistency of the questionnaire used. Typically, the agreed-upon level of Cronbach's alpha coefficient value is 0.70, implying that a measurement scale is reliable when the value is above 0.70 (Gliem & Gliem, 2003). According to Table 1, all the value dimensions measured with the instrument ranged between 0.75 to 0.82 affirming the reliability of the scale.

Table 1: Cronbach Alpha coefficient

Measurement scales tested	**Number of items**	**Cronbach's alpha**
Effect of COVID-19 on hotels	8	0.765
Ease of use of the technological advancements	8	0.751
Intention and degree of using technology	7	0.821
Challenges experienced	8	0.812

Results and discussion

Demographic information

In terms of age, the results show that different age groups participated in the study with the oldest participant being 66 years old and the youngest participant being 18 years of age. The highest participating age group in the study was participants of the ages of 25 and 31 years, with both age groups having a 6.8% respectively to the overall participants. This justifies the research data produced by Mindscape Team (2020), that the ages of 25-34 dominate the labour force by 61.7%.

Hotel departments represented

The findings indicate that the study attained responses from various departments across the hotel departments. Most participants were from the Food and Beverage department (42.7%) this was expected as hotels have many employees in the food and beverage department as they focus a lot on the service given out to guests. The high participation of food and beverage employees may be attributed to the study of Emiroğlu et al. (2015) wherein they conducted a comparative analysis of staffing levels in in various departments in 4 and 5-star hotels. Their findings show that the food and beverage department consistently employs a higher number of staff members compared to other departments. As there is a higher demand for food and beverage service in luxury hotels. Furthermore, the food and beverage departments in 4 and 5-star hotels make considerable use of technological advancements to enhance operations and improve guest satisfaction (Kafadar & Sormaz, 2022).

Table 2: Departments of employees

Department	**Frequency(n)**	**Percent (%)**
Food and Beverage	44	42.7
Reservations	14	13.6
Butlers	10	9.7
Front Desk	8	7.8
Kitchen	8	7.8
Housekeeping	5	4.9
Maintenance	4	3.9
Security	4	3.9
Stores	3	2.9
Administration	3	2.9
Total	**103**	**100.0**

Hotel employees' perceptions of the influence of COVID-19 on hotel operations

Hotel employees' perceptions of the influence of COVID-19 on hotel operations were measured across eight value dimensions based on a 5-point Likert scale, for which the results are presented in Table 3.

Table 3: Hotel employees' perceptions of COVID-19 influence on hotel operations and the adoption of technology

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Change in operations in your hotel	1.9	1.9	21.4	37.9	36.9	**4.06**
Minimise contact/high-touch services	0	1	11.7	60.2	27.2	**4.14**
Make use of high-technology services	0	1	19.4	37.9	41.7	**4.20**
Less use of staff and more reliance on technological advancements	1.9	11.7	17.5	43.7%	25.2	**3.79**
Technological innovation and change in your hotel		1.9	2.9	57.3	37.9	**4.31**
Affected your ability to function at work	8.7	9.7	16.5	37.9	27.2	**3.65**
Guest expected less contact services and more use of technology	1	6.8	13.6	49.5	29.1	**3.99**
Information shared on tech advancements as they are introduced	1	1	14.6	43.7	39.8	**4.20**

The findings show that hotel employees agree that the COVID-19 pandemic incited changes in hotel operations, realising a statistically significant mean (M=4.06). These findings resonate with findings from Khan and Hashim's (2020) study where they affirmed that for hotels to emerge resilient from the pandemic's long-lasting impacts, hotels needed to review, innovate and transform hotel operations. The findings are also in accord with Gursoy and Chi (2020), that in the COVID-19 climate, hotels were required to significantly alter their operations to protect the health and safety of their staff and guests, as well as to increase guests' willingness and confidence to patronaging hotels. The findings from this study also indicate that hotel employees were encouraged to minimise high-contact interactions (60.2%), realising a statistically significant mean (M=4.14). A study conducted by Afaq and Gaur (2021) also found that during the peak of the pandemic, interactions between hotel employees and guests were kept minimal to avoid the potential risk of exposure to the virus. Moreover, with a significant mean (M=4.31), hotel employees agreed that the COVID-19 pandemic incited an intensified adoption and use of technological innovations which brought change to the hotel's operations. Affirmed by Bartik et al. (2020) that the sudden outbreak of the virus forced hotels to change how they delivered services to their guests and shift from high-touch service offerings to low-touch and high-tech service offerings with the aid of technological advancements (Hao, 2021). Such findings confirm the importance of hotels keeping up with requirements for ensuring sustainability during uncertain times and evolving their service offerings and operations to build resilience for survival. While hotels keep their awareness on the pulse (keeping abreast with change and trends), they enhance the hotel's overall image and contribute to their long-term resilience (Jiang & Wen, 2020).

The perceived usefulness of technological advancements

Hotel employees' perceptions of the perceived usefulness of technological advancements implemented during the COVID-19 pandemic were measured across seven value dimensions based on a 5-point Likert scale, for which the results are presented in Table 4.

"Ease of use/navigation for staff" obtained the highest level of agreement concerning the measure of perceived usefulness of technological advancements implemented amidst the COVID-19 pandemic. The measure attained a statistically significant mean (M=4.28). Affirmed in Joe and Raj (2021) study that technology significantly reduces the amount of work that staff must do, employees expect their employers to supply them with the most recent and effective technological innovations that will make it easier for them to properly fulfil their job duties and it makes their ordinary job interesting and less taxing, which will help them finish projects by the deadline. Indicated in the table, a significant mean (M=4.24), where hotel

employees viewed the technology used as effective and efficient, this confirms Leonard's (2019) statement that technology may significantly increase a hotel's overall effectiveness and success in the market, as well as staff productivity, communication, cooperation, morale, and engagement throughout the whole organisation.

Table 4: The perceived usefulness of technological advancements

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	M
The technology is fast	1.0%	0.0%	21.4%	49.5%	28.2%	**4.04**
The technology is efficient and effective	0.0%	2.9%	6.8%	64.1%	26.2%	**4.14**
The technology is reliant	0.0%	1.0%	14.6%	50.5%	34.0%	**4.17**
The technology provides accurate results	0.0%	1.0%	6.8%	57.3%	35.0%	**4.26**
Guests find it easy to navigate and use the technology	0.0%	3.9%	18.4%	43.7%	34.0%	**4.08**
Ease of use/navigation for staff	0.0%	0.0%	10.7%	50.5%	38.8%	**4.28**
The technology is user-friendly	1.0%	0.0%	8.7%	53.4%	36.9%	**4.25**

The technological advancements were considered reliant by 50.5%, while 57.3% of employees agreed that the technology implemented provided accurate results and information in the workplace. The results align with Joe and Raj (2021), that technology allows organisations to provide their consumers with efficient and effective means of contact, an organisation can use technology in many ways for communication, some of these include emails, face-to-face video conferencing, and text messaging that may be utilised whenever information about a good or service is needed to be communicated, as well as for the prompt resolution of client concerns. A significant mean (M=4.08) was obtained for the agreement regarding employees' perceptions of guests' experiencing ease in using and navigating technological advancements. This may be expected as guests prefer rapid and effective experiences with technology. Guests also require convenient service and want products and services tailored for them (Ahmed, 2019). It is therefore guaranteed that employees who participated in the study have adopted technology quite effectively and incorporated it into their functioning in the workplace.

Challenges experienced with technological advancements

Hotel employees' experiences and challenges with technological advancements implemented amidst the COVID-19 pandemic were measured across nine value dimensions based on a 5-point Likert scale, for which the results are presented in Table 5.

Table 5: Challenges experienced with technological advancements

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total	M
The technology is often slow	33.0%	28.2%	36.9%	1.9%	0.0%	100.0%	**2.08**
Often experiences network issues	18.4%	48.5%	24.3%	6.8%	1.9%	100.0%	**2.20**
There is some difficulty in navigating the technology	33.0%	34.0%	28.2%	3.9%	1.0%	100.0%	**2.03**
It is often not accurate	32.0%	51.5%	10.7%	4.9%	1.0%	100.0%	**1.88**
Load-shedding often affects the network connectivity	48.5%	27.2%	14.6%	3.9%	5.8%	100.0%	**1.72**
Guests are often not satisfied with the technology	37.9%	42.7%	14.6%	3.9%	1.0%	100.0%	**1.84**
Technology use takes away a good service experience	36.9%	40.8%	14.6%	3.9%	3.9%	100%	**1.85**
Technology use has negatively affected guest and hotel staff relations	43.7%	43.7%	6.8%	4.9%	1.0%	100%	**1.73**

Table 5 reflects that employees with a mean of (M=2.08) disagree with the statement that technology is often slow, also 48.5% disagree that the technology experiences network issues. 50 employees (48.5%) strongly disagreed that load-shedding affects their ability to use technology. These findings contradict Bromhall (2022), who mentioned that load shedding affects businesses regardless of what industry it is, all businesses were affected by power outages to some degree. Bromhall (2022) mentions that to combat load-shedding, companies need to invest in alternate power sources, which cover devices like routers, dongles, power banks and generators. These extra power supplies could be expensive. While Wi-Fi is unavailable due to load shedding, many businesses must rely on cellular data; however, additional data fees may be a significant expense. Additionally, during load-shedding hours, restaurants frequently use more gas. Once more, this can drastically raise running expenses, businesses confront a never-ending number of obstacles daily, and load-shedding is often one of the toughest (Bromhall, 2022). Of the employees, 42.7% disagree that guests are not satisfied with the technology, this is expected as trends described by Stringam and Gerdes (2021) show that when customers book their stay, they want to be able to use their electronic devices and connect to the internet smoothly and without too many delays. As a result, hotels have made investments in better, faster Wi-Fi infrastructure. 40.8% of the employees disagreed that technology takes away a good service experience from their clients. The main reason is that, as per Oracle Hospitality, hotels make technological investments to improve the guest experience and sway post-trip internet reviews from visitors. According to Escober (2022), visitors prefer using technology because the comfort of guest rooms allows for internetwork, and if they would rather not use the gaming facilities that hotels typically offer, they can unwind in their rooms while using high-tech amenities, streaming their favourite programmes, and playing online casino games on websites like Novibet. A cleaning system also ensures the visitors' health, which is important because the outcome is a relaxing and gratifying experience.

Conclusion and recommendations

In conclusion, the COVID-19 pandemic has had a profound impact on the hotel industry, forcing hotel operators to reevaluate and adapt their operations to ensure the safety of their guests and staff. The adoption of new technology played a crucial role in facilitating recovery and building resilience for hotels during these challenging times. Technologies such as robots, contactless payment methods, and keyless entry systems have not only improved hygiene but also enhanced convenience for guests. As the hotel industry continues to recover from the effects of the pandemic, the adoption of new technology and the implementation of innovative sustainability strategies will remain crucial in maintaining resilience and meeting new customer expectations. Hotel operators must continue to embrace these changes and leverage technology and sustainability practices to ensure their operations remain efficient, safe, and sustainable in the post-pandemic world. The study established that employees in the workplace have certain behaviours toward the usage of technology, the TAM was used to clearly understand these kinds of behaviours from the perspective of hotels. The data collected shows that hotels and their employees have embraced the adoption of new technological advancements, and they are willing to use them to make their work efficient and convenient. The study recommends that further research be considered from a guest perspective. With technology constantly evolving, employees of hotels and guests will change how they perceive technology, and their behavioural traits will also be impacted. The study recommends a future agenda for research regarding the sustainability of the use of advanced technology in hotels in South Africa in the face of prolonged and expensive load shedding (scheduled power outage). This study was conducted during a period when there was minimal load shedding. Furthermore, an agenda for research regarding insights into understanding guests' perceptions and behaviours while

making use of technology in high-tech hotels. With technology constantly evolving, hotel guests will change how they perceive technology, and their behaviour traits will also be impacted. More research also must be done on how hotels are training their employees on the new technology being implemented.

References

Afaq, A. & Gaur, L. (2021). The Rise of Robots to Help Combat COVID-19. In *Proceedings of 2021 International Conference on Technological Advancements and Innovations (ICTAI)* (pp. 69-74). IEEE.

Agrebi, S. & Jallais, J. (2015). Explain the Intention to Use Smartphones for Mobile Shopping. *Journal of Retailing and Consumer Services*, 22 (6), 16-23.

Ahmed, A. (2019). *How Does Technology Improve Customer Service?* Available at https://bizfluent.com/about-5341221-technology-improve-customer-service.html [Retrieved 19 October 2022].

Bartik, A.W., Bertrand, M., Cullen, Z.B., Glaeser, E.L., Luca, M. & Stanton, C.T. (2020). *How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey (April 12, 2020)*. HKS Working Paper No. RWP20-012, University of Chicago, Becker Friedman Institute for Economics, Working Paper No. 2020-42. (No. w26989). National Bureau of Economic Research.

Bello, M.B. & Bello, Y.O. (2021). Consequences of COVID-19 Pandemic on Hospitality Industry: The Nigeria Experience. *International Journal of Research and Innovation in Social Science*, 5 (1), 422-425.

Bromhall, M. (2022). How Load Shedding Affects Small Businesses. *SME South Africa*. Available at https://smesouthafrica.co.za/how-load-shedding-affects-small-businesses/ [Retrieved 19 October 2022].

Brown, N.A., Rovins, J.E., Feldmann-Jensen, S., Orchiston, C. & Johnston, D. (2017). Exploring Disaster Resilience Within the Hotel Sector: A Systematic Review of Literature. *International Journal of Disaster Risk Reduction*, 22, 362-370.

Buick, I. (2003). Information Technology in Small Scottish Hotels: Is it Working? *International Journal of Contemporary Hospitality Management*, 15 (4), 243-247.

Castañeda, J.A., Muñoz-Leiva, F. & Luque, T. (2007). Web Acceptance Model (WAM): Moderating effects of user experience. *Information & Management*, 44 (4), 384-396.

Christou, E. & Kassianidis, P. 2 (2002). Consumer's Perceptions and Adoption of Online Buying for Travel Products. *Journal of Travel & Tourism Marketing*, 12 (4), 93-107.

Colmekcioglu, N., Dineva, D. & Lu, X. (2022). "Building Back Better": The Impact of the COVID-19 Pandemic on the Resilience of the Hospitality and Tourism Industries. *International Journal of Contemporary Hospitality Management*, 34 (11), 4103-4122.

Creswell, J.W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th ed. Thousand Oaks, CA: SAGE.

Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13 (3), 319-340.

Davis, N. (2003). Technology in Teacher Education in the USA: What Makes for Sustainable Good Practice? *Technology, Pedagogy and Education*, 12 (1), 59-84.

Emiroğlu, B.D., Akova, O. & Tanrıverdi, H. (2015). The Relationship Between Turnover Intention and Demographic Factors in Hotel Businesses: A Study at Five-Star Hotels in Istanbul. *Procedia-Social and Behavioral Sciences*, 207, 385-397.

Escober, M.C. (2022). Hospitality Technology, Smarter Hotels and Restaurants. The 2022 Guest Room Experience: What a Guest Wants, What a Hotel Needs. *Hospitality*

Technology, Smarter Hotels and Restaurants. Available at https://hospitalitytech.com/2022-guest-room-experience-what-guest-wants-what-hotel-needs [Retrieved 27 October 2023].

Garrido-Moreno, A., Garcia-Morales, V.J. & Martín-Rojas, R. (2021). Going Beyond the Curve: Strategic Measures to Recover Hotel Activity in Times of COVID-19. *International Journal of Hospitality Management*, 96, 102928.

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*, 33 (11), 4079-4098.

Gliem, J.A. & Gliem, R.R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. *2003 Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education*. (pp. 82-88). Available at https://www.scirp.org/(S(lz5mqp453edsnp55rrgjct55)/reference/ReferencesPapers.aspx?ReferenceID=1786097 [Retrieved 7 December 2021].

Gossling, S., Scott, D. & Hall, M.C. (2020). Pandemics, Tourism and Global Change: A Rapid Assessment of COVID-19. *Journal of Sustainable Tourism*, 29, 1-20.

Gursoy, D. & Chi, C. (2020). Effects of COVID-19 pandemic on Hospitality Industry: Review of the Current Situations and a Research Agenda. *Journal of Hospitality Marketing & Management*, 29 (5), 527-529.

Hao, F. (2021). Acceptance of Contactless Technology in the Hospitality Industry: Extending the Unified Theory of Acceptance and Use of Technology 2. *Asia Pacific Journal of Tourism Research*, 26 (12), 1386-1401.

Januszewska, M., Jaremen, D.E. & Nawrocka, E. (2015). The Effects of the Use of ICT By Tourism Enterprises. *Service Management*, 2 (16), 65- 73.

Jiang, Y. & Wen, J. (2020). Effects of COVID-19 on Hotel Marketing and Management: A Perspective Article. *International Journal of Contemporary Hospitality Management*, 32 (8), 2563-2573.

Joe, M.C.V. & Raj, D.J.S. (2021). Location-based Orientation Context Dependent Recommender System For Users. *Journal of Trends in Computer Science and Smart Technology*, 3 (1), 14-23.

Jung, T., Chung, N. & Leue, M. C. (2015). The Determinants of Recommendation to Use Augmented Reality Technologies: The Case of Korean Theme Park. *Tourism Management*, 49, 75-86.

Kafadar, A.M. & Ormaz, Ü. (2022). Determining Innovative Applications in Restaurant Businesses: The Case of Istanbul. *Gastromedia Journal*, 1 (2), 1-13.

Khan, M.A.A. & Hashim, H. (2020). The Effect of Covid-19 on Tourism And Hospitality Industry in Malaysia, Resurgence in the Post-Pandemic Era: A Conceptual Criterion. *International Journal of Tourism & Hospitality Review*, 7 (2), 54-62.

Kim, J., Christodoulidou, N. & Brewer, P. (2012). Impact of Individual Differences and Consumers Readiness on Likelihood of Using Self-Service Technologies at Hospitality Settings. *Journal of Hospitality & Tourism Research*, 36 (1), 85-114.

Kim, T.G., Lee, J.H. & Law, R. (2008). An Empirical Examination of the Acceptance Behaviour Of Hotel Front Office Systems: An Extended Technology Acceptance Model. *Tourism Management*, 29 (3), 500-513.

Law, R. & Jogaratnam, G. (2005). A Study of Hotel Information Technology Applications. *International Journal of Contemporary Hospitality Management*, 17 (2), 170-180.

Lee, W., Xiong, L. & Hu, C. (2012). The Effect of Facebook Users' Arousal and Valence on Intention to Go to the Festival: Applying in Extension of the Technology Acceptance Model. *International Journal of Hospitality Management*, 31 (3), 819-827.

Lee, Y., Kozar, K.A. & Larsen, K.R. (2003). The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems*, 12 (1), 50.

Leonard, J. (2019). *How Technology Improves Workplace Productivity*. Available at https://www.business2community.com/human-resources/how-technology-improves-workplace-productivity [Retrieved 7 October 2022].

Leung, P. & Lam, T. (2004). Crisis Management During the SARS Threat: A Case Study of the Metropole Hotel in Hong Kong. *Journal of Human Resources in Hospitality & Tourism*, 3 (1), 47-57.

Li, M., Dong, Z.Y. & Chen, X. (2012). Factors Influencing Consumption Experience of Mobile Commerce: A Study from Experiential View. *Internet Research*, 22 (2), 120-141.

Lo, I.S., McKercher, B., Lo, A.S., Cheung, C. & Law, R. (2011). Tourism and Online Photography. *Tourism Management*, 30 (4), 725-731.

Lukose, W., Sarode, A.V. & Shivekar, R.S. (2023). Impact of COVID-19 on the Usage of AI with Respect to Chat Bots in Hotels. *Journal of Pharmaceutical Negative Results*, 14 (2), 577-585.

Morosan, C. (2011). Customers' Adoption of Biometric Systems in Restaurants: An Extension of the Technology Acceptance Model. *Journal of Hospitality Marketing & Management*, 20 (6), 661-690.

Murphy, H.C., Chen, M. & Cossutta, M. (2016). An Investigation of Multiple Device and Information Sources Used in the Hotel Booking Process. *Tourism Management*, 52, 44-51.

Ntounis, N., Parker, C., Skinner, H., Steadman, C. & Warnaby, G. (2022). Tourism and Hospitality Industry Resilience During the Covid-19 Pandemic: Evidence from England. *Current Issues in Tourism*, 25 (1), 46-59.

Özkan, C. (2022). *Analysis of New Applications in Hotel Enterprises Main Departments*. Lyon, France: Livre de Lyon. Available at https://bookchapter.org/kitaplar/Analysis_of_New%20Applications%20in%20Hotel%20Enterprises%20Main%20Departments.pdf [Retrieved 7 December 2021].

Pai, F.Y. & Huang, K.I. (2011). Applying the Technology Acceptance Model to the Introduction of Healthcare Information Systems. *Technological Forecasting & Social Change*, 78 (4), 650-660.

Pillai, S.G., Haldorai, K., Seo, W.S. & Kim, W.G. (2021). COVID-19 and Hospitality 5.0: Redefining Hospitality Operations. *International Journal of Hospitality Management*, 94, 102869.

Premkumar, G., Ramamurthy, K. & Liu, H.N. (2008). Internet Messaging: An Examination of the Impact of Attitudinal, Normative, And Control Belief Systems. *Information & Management*, 45 (7), 451-457.

Rahimizhian, S. & Irani, F. (2020). Contactless Hospitality in a Post-COVID-19 World. *International Hospitality Review*, ahead-of-print(ahead-of-print). http://dx.doi.org/10.1108/IHR-08-2020-0041 .

Rivera, M., Gregory, A. & Cobos, L. (2015). Mobile Application for the Timeshare Industry: The Influence of Technology Experience, Usefulness, and Attitude on Behavioural Intentions. *Journal of Hospitality and Tourism Technology*, 6 (3), 242-257.

Rivera, M.A. (2020). Hitting the Reset Button for Hospitality Research in Times of Crisis: Covid-19 And Beyond. *International Journal of Hospitality Management*, 87, 102528.

Rodriguez, B., Molina, J., Perez, F. & Caballero, R. (2012). Interactive Design of Personalised Tourism Routes. *Tourism Management*, 33 (4), 926-940.

Rodríguez-Antón, J.M. & Alonso-Almeida, M.D.M. (2020). COVID-19 Impacts and Recovery Strategies: The Case of the Hospitality Industry in Spain. *Sustainability*, 12 (20), 8599.

Ruiz-Martin, C., López-Paredes, A. & Wainer, G. (2018). What We Know and Do Not Know About Organizational Resilience. *International Journal of Production Management and Engineering*, 6 (1), 11-28.

Sigala, M. (2020). Tourism and COVID-19: Impacts and Implications for Advancing and Resetting Industry and Research. *Journal of Business Research*, 117, 312-321.

Stringam, B.B. & Gerdes, J.H., (2021). Hotel and Guest Room Technology. In Cobanoglu, C., Dogan, S., Berezina, K. & Collins, G. (Eds.). *Hospitality & Tourism Information Technology* (pp. 1-60). University of South Florida (USF): M3 Publishing.

Subedi, S. & Kubickova, M. (2023). Effect of COVID-19 on Hotel Performance: Role of Government. *Journal of Hospitality and Tourism Insights*. https://doi.org/10.1108/JHTI-06-2022-0274

Venkatesh, V. & Davis, F.D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46 (2), 186-204.

Venkatesh, V. & Morris, M.G. (2000). Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behaviour. *MIS Quarterly*, 24 (1), 115-139.

Wang, H.Y., Liao, C. & Yang, L.H. (2013). What Affects Mobile Application Use? The Roles of Consumption Values. *International Journal of Marketing Studies*, 5 (2), 11.

Wu, K., Zhao, Y., Zhu, Q., Tan, X. & Zheng, H. 2011). A Meta-Analysis of the Impact of Trust on Technology Acceptance Model: Investigation of Moderating Influence of Subject and Context Type. *International Journal of Information Management*, 31 (6), 572-581.

Yao, X., Hong, J. & Zeng, L. 2022). A Study on the Evaluation of the Innovation Efficiency of Star Hotel Services Based on the DEA-Malmquist Index. *Mathematical Problems in Engineering*, 2022.