ORIGINAL RESEARCH ARTICLE

Mitigating the impacts of COVID-19 pandemic on hotel services: A conceptual framework on technological innovations and employee well-being

Patita Paban Mohanty

School of Hotel Management, Faculty of Hospitality and Tourism Management, Siksha 'O' Anusandhan (SOA) University, Odisha 751030, India; patitamohanty@soa.ac.in

ABSTRACT

Purpose: This present article offers insight into the impacts and implications of COVID-19 on the service delivery process for hotel customers. The objective also reflects on how technological innovations may mitigate those impacts and contribute to employee well-being. Keeping in mind the above, a conceptual framework has been developed that clearly and critically depicts the COVID-19 impact on technological innovation and its subsequent influence on hotel employees well-being. **Design/methodology/approach:** This research paper strongly outlines the current theoretical background on hotel services impacted by the COVID-19 pandemic. The author also investigated the current trends in hotel guest services influenced by technological innovations. The present data and industry report have been used to formulate the conceptual framework linked to employee well-being. **Findings:** This study proposes an underlying theory and research plan on technological innovation that facilitates hotel service delivery while keeping COVID-19 and social distance in mind and thereby contributes to comprehensive employee well-being. **Originality/value:** This article would be a pioneering study seriously investigating the impact of COVID-19 on hotel service delivery engulfed by the various technological innovations and contributing towards employee well-being at macro and micro levels.

Keywords: technological innovation; COVID-19 pandemic; hotel services; impact; employee well-being

1. Introduction

The persistent wave of the pandemic COVID-19 has aggravated the global crisis, impacting billions of people as well as global economies[1]. The hospitality, travel, and tourism sectors are the hardest hit sectors, already "on the verge of collapse" and fighting for survival[2]. Since its outbreak, the government and local authorities have imposed guidelines like social distancing to mitigate the transmission. The purpose of social distancing is to minimize physical contact among individuals in society. The report[3] reveals social distancing has induced work from home, cancellation of public gatherings, and service at a distance.

While social distance tries to prevent viral transmission, it also creates enormous hurdles for hotel services and their employees throughout the world. Hotels must re-evaluate current business practices to ensure the well-being of both guests and employees. Social distancing practices have a massive effect on the hospitality and tourism sectors, which are currently suffering immensely[4]. Social distancing has stopped "service

continuity", preferably in the hospitality sector, and forced technological innovation for contactless service and employee well-being. Technological innovation has become a "panacea" because of its power to combat pandemics.

With the advent of new technology, the process of innovation has been augmented further in artificial intelligence (AI), metaverse technology, virtual reality (VR), robotics, and drone taxis facilitating hotel and tourism services[5–9]. Technological innovation and implementation in hotels have delved into an era of "contactless services", contributing to employee well-being mentally and physically by minimizing virus phobia and facilitating work done during and post-COVID-19.

Innovations create ripples in any industry and impact positively or negatively on employees' mental health. Needless to say, the COVID-19 pandemic is a "blessing in disguise", exploring the sudden need for technological innovation for employee well-being. Furthermore, COVID-19 has transformed "human touch into machine touch" through technical innovation via a contactless platform. Indeed, many hotels have already deployed innovative techniques[10] increased hygiene standards, and social distancing to protect their employees from deadly diseases[11–14].

However, no research has been conducted to investigate the impact of the pandemic on hotel services induced by technological innovation and its contribution to employee well-being. This article investigates the rapid adaptation of technological innovations for service continuity and delivery and its impact on employee well-being because the severity of the pandemic has intensely engulfed and paralyzed hotel services.

To the best of the researchers' knowledge, this is the first study during the pandemic highlighting technological innovation for service continuation and influencing hotel employee well-being. This paper may be able to develop a conceptual framework depicting the impact of the COVID-19 pandemic on hotel services and employee well-being due to technological innovation. The framework exudes two levels of moderators—a macro-level and a micro-level—connecting to technological innovation and employee well-being. After all, hotel staff are central to the service rendered to the customers; hence, their well-being should not be ignored. It has been further emphasized that, during crisis time, employees need to be taken care of physically, mentally, and emotionally for service continuation and delivery.

More specifically, the current paper aligns well with Transformative Service Research (TSR)[15] which strongly evokes the idea that hospitality service organizations are not only concerned with customer well-being but also employees and local communities. Customer satisfaction is the prime goal in hotels. Staff performs a significant role by delivering personalized service; hence, their well-being remains a fertile research area that needs further study and investigation. Thus, this paper has threefold research objectives: (1) to discuss the effect of the pandemic on hotel services due to social distancing; (2) to investigate the impact of the pandemic on hotel services induced by technological innovation and its subsequent contribution towards employee well-being; and (3) to find out research themes to develop unique perspectives of employee well-being during and after the pandemic based on the conceptual framework.

2. Literature review

2.1. COVID-19 and hotel services

COVID-19 is extremely infectious and spreads rapidly among people in society; hence, physical contact[16] and social separation are the ultimate ways to mitigate the disease[17]. Previous research revealed that diseases, natural disasters, and terrorist attacks pose a significant danger to the hotel industry[18]. According to Wang and Ritchie[19] the hotel industry in particular requires effective crisis management to get rid of natural disasters. Disasters have various implications, prompting the hotel industry to take action to mitigate the crisis. For

instance, after the 9/11 attacks, hotel industries in Hong Kong enhanced their security system through closed-circuit television (CCTV)[18].

"Contactless" food services became the trend during the lockdown globally[14]. During the early days of the pandemic, hotel establishments preferred shifting their fine dining services to fast food[20]. Nhamo et al.[21] report that many restaurants around the world limit their customers' footfall, leading to social distancing. The global supply chain also stopped their services due to the fear of the pandemic causing severe problems for food and beverage services[22]. The service disruption also arose due to a lack of hotel manpower supply[23].

The radical changes in the service offerings facilitate the alternative methods to be imbibed by the hotel management for business survival[24]. The rise of takeaways, delivery, third-party transportation, and technology helped many hotels and restaurants shut down[25,26]. In addition, COVID-19 also induced an increase in health, sanitation, and safety awareness and practices[27].

Furthermore, Kim et al.[28] propounded that preventive measures are necessary to survive the crisis. According to the World Health Organization (WHO), the pandemic had dramatically affected human interaction and broke the hotel services framework. The pandemic had threatened the *"human touch"* and disrupted the service delivery chain, leading to technological innovation for service continuation. Moreover, COVID-19 had transferred the *"human touch"* to *"machine touch"* for the revival of the industry, contributing employee well-being.

2.2. Technological innovation in hotel services

Innovation is critical to the success of the hospitality industry during the crisis because it meets changing customers' expectations, lowers costs, boosts productivity, and enhances sales and profits[29]. To comprehend this phenomenon better, one must acknowledge that the hospitality industry mostly relies on services and innovationl; other industries are different than hotel services[30]. Tragically, there is still a dearth of study on innovation in the service industry, and the travel and tourism industry has even less of it both conceptually and practically[31,32].

Tourism and hospitality management have been upgraded and modernized with the accelerated impact of digital management tools to meet customer requirements and needs[7,9]. Technological innovation in hotels may change customer service and provide a unique experience through effective and efficient personalized service[33]. An in-depth study is required to determine the level of innovation and its impacts on hotel services and employee well-being. Both incremental and radical innovation are discussed as the focus of COVID-19[34] (**Table 1**).

Incremental innovation is based on current technologies and knowledge targeting the present market, whereas radical innovation is induced by new technologies and theoretical or applied knowledge[35,36]. The innovation has the potential to change the present system by destroying it through disruptive technology[35,37]. Considering the above two levels of innovation, the present technological innovation triggered by COVID-19 belongs to radical innovation[36]. Innovation, particularly in service offerings and designs, has attracted considerable scholarly interest in the hospitality and tourism literature[38,39]. However, a dearth of research on the technological innovations underpinning the hospitality industry during and after crises is essential for sustaining service delivery and employee well-being. Hence, during and post-pandemic, there would be a surge of interest in technological innovation in the hospitality sector.

Table 1. Type of innovations adopted by various hotels during COVID-19.

Hotel organisations	Publication date	Declaration link	Type of innovation
Marriott International	10th March 2020	Marriott International statement on cleaning protocols https://news.marriott.com/news/2020/03/10/marriottinterna tional- statement-on-cleaning-protocols	Product-process innovation
Wyndham	19th March 2020	Statement from Wyndham Hotels & Resorts: COVID-19 https://www.franchising.com/news/20200316_statement_fr o m_wyndham_hotels_amp_resorts_covid19.html	Product-process innovation
Hilton	26th March 2020	Hilton CEO forgoing salary as part of company's corona virus responsehttps://www.usatoday.com/story/money/2020/03/ 26/coronavirus-furloughs-job-cuts-hilton-ceo-forgoingsalary/2922894001/	Organisational innovation
Marriott International	3rd April 2020	Marriott borrows $2B to guard against impacts of pandemic https://www.bizjournals.com/washington/news/2020/04/03 /marriott-borrows-2b-to-guard-against-impacts-of.html	Organisational innovation
Hyatt	15th April 2020	Hyatt Launches Hyatt Care Fund to Provide Financial Relief to Global Colleagues https://www.hotelbusiness.com/lending-a-hand-karismahyatt-and-more/	Organisational innovation
Choice Hotels	4th May 2020	Choice Hotels Announces Commitment to Clean Initiative http://media.choicehotels.com/2020-05-04-Choice-Hotels-Announces-Commitment-To-Clean-Initiative	Product-process innovation

Source: Adapted from Sharma et al.[34].

2.3. Employee well-being

In the burgeoning literature of hospitality and tourism, scholars and academicians have explored the technological innovation influencing hospitality services and contributing to employee well-being. Employee well-being is critical to an organization's survival and performance. Therefore, hotel management strives for technological advancement to survive the pandemic[40].

The nexus between technological innovation and employee well-being is well-studied in this paper. Thus, it is critical to understand how innovations impact hotel services, leading to employee well-being in times of uncertainty. This paper is very interesting because it reflects how the pandemic has enhanced the relationship between technological innovation and employee well-being. Hence, the study of employee well-being is very significant. There are several definitions of workplace well-being[41], and some of them are workplace health and safety (e.g., International Labour Organisation[42]). The COVID-19 pandemic has intensified health and safety issues among hotel employees. Similarly, the OSHO report says that employee well-being means creating a positive work environment. Furthermore, employee well-being constitutes the health of the staff working in a safe environment; a conducive workplace satisfies them and achieves work-life balance[43].

Employee well-being is a critical topic for discussion among hotel employees and customers too[44,45]. The growing interest in employee well-being is connected with employee efficiency and output, maintaining a proper work environment[46,47]. Employee well-being is especially crucial in the service sector, since the frontline staff render the service to customers.

Frontline hotel employees who offer personalized services suffer health hazards like contamination, infestation, depression, worry, and psychosis[48]. Similarly, work pattern changes, self-isolation, quarantine, and physical distancing arouse tension, distress, and insecurity[49,50]. Psychological health determines the employees' well-being, which is a precursor to job satisfaction[51]. Qualitative research examined the various forms of stress that the pandemic brought to US hotel industry workers, including isolation, fear of infection,

economic instability, and difficult work demands[52,53]. For instance, a study carried out in Korea found that the pandemic's physical, mental, financial, and social effects raised work stress, which in turn reduced well-being and mental health[54]. Similarly, research from Turkey, Pakistan, and the US found that the COVID-19 pandemic generated occupational stress, which negatively affected the mental health and well-being of hotel staff and was associated with higher absenteeism from work, decreased job satisfaction, and increased turnover[55–57].

Job satisfaction of hotel employees has been leveraged by the long hours of working, no flexible time, low wages, and management culture affecting mental frustration and fatigue[58,59]. The research insight into employee well-being has further delved into three dimensions, such as psychological, physiological, and social dimensions[60,61]. From the above, it seems crises inspire development through technological innovation[62].

The authors in this paper have found the nexus between technological innovation and its impact on various well-being perspectives, such as psychological, physiological, and social (**Table 2**).

Table 2. Employee well-being perspectives.

Perspectives	Illustration
Physical well-being	• The stamina and energy of the person to perform works[63] • Exercise and vitality, degree of exercise, body weight, and sleep are all taken into account • Well-built structure and strong stamina help in a positive mindset[64]
Mental well-being	• As per the World Health Organization[65], a well-to-do condition in terms of a healthy mind and body can be able to perform any kind of work to sustain and survive life
Social well-being	• Capacity to engage in the society and community for relationship and harmony[66]
Financial well-being	• Power of managing the socio-economic status in the society[67] • Ensuring of existing economic stability[68]

Source: Adapted from Tuzovic and Kabadayi[69].

Various factors of mental health agony and disorders are the result of inflexible time, job pressure and tension, and higher output and efficiency expectations among employees[70]. Hence, to improve mental health during this pandemic, theories of work design such as the job characteristics model[71] and the Job Demands and Resources model (JDR model)[72] have been well-propounded in this paper. In the present situation, hotels are struggling with the impact of social distancing induced by the COVID-19 pandemic; hence, employee well-being has been studied from both levels (see **Figure 1**).
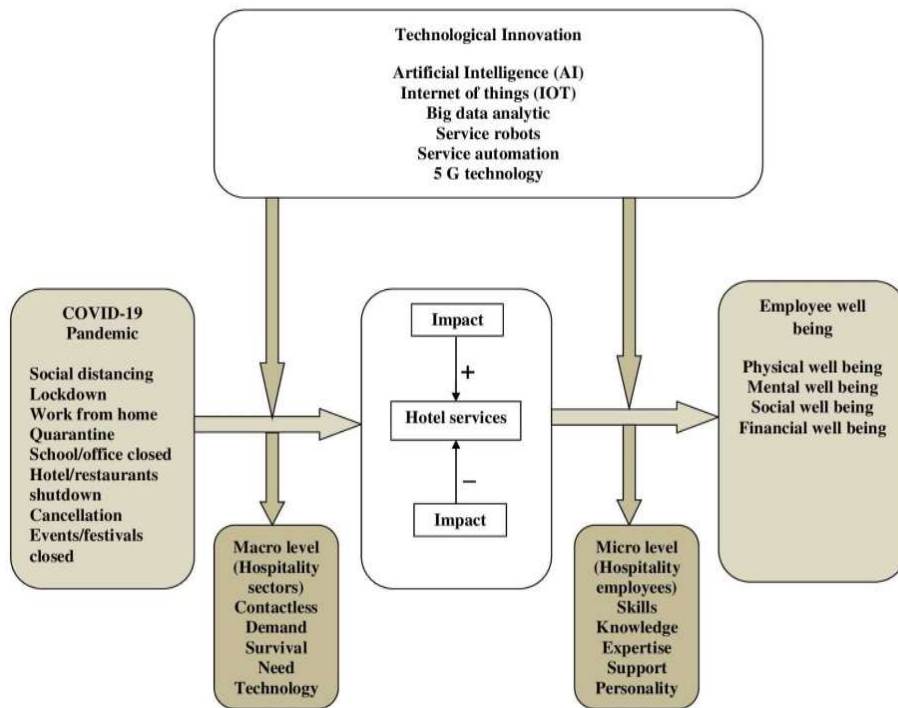
Figure 1. Conceptual framework.

Source: Author's own elaboration.

3. Methodology

This present study is qualitative by nature, and a secondary method has been used to build the conceptual framework. Conceptual articles are structured into several diverse streams of content in order to give novel insight[73]. The information was gathered from secondary research conducted by numerous scholars and organizations.

During the investigation, the data obtained from research papers and articles published in national and international journals, related to employee well-being perspectives and technological innovation. Data related to COVID-19 and their effects on hotel services are collected from the reports of the World Health Organization. Extensive investigation of extant literature results in COVID-19 on hotel services, technological innovation, and employee well-being. The integrated literature review is a distinct type of study that generates new insight and information about the issue under consideration[74]. The goal of the literature review is to summarise the present situation related to certain issues[73].

4. Result

4.1. Macro level: Hospitality organizations

Hospitality organizations are striving to reduce the COVID-19 virus by adhering to the various laws and restrictions issued by government authorities. Hotels around the world have adopted various innovative steps to mitigate the COVID-19 pandemic for employee well-being and business sustainability.

During the pandemic, hotels adopted product-process innovation for safe and hygienic service delivery, offering completely cloud-based check-in systems and robot-operated check-in devices[10].The pandemic has brought a technological revolution in hospitality services, harnessing the potential benefits of artificial

intelligence (AI) and robots[75]. Artificial intelligence (AI) and robotics technology have been effectively employed for cooking and serving food, cleaning guest rooms, and other service-related jobs effectively[76].

At the organizational level[77,78], AI and robotics have greatly impacted hotel services. Thus, adopting AI and robots in hotels has eliminated mysophobia (fear of viruses) and protected both guests and front-line employees, resulting in a happy mind at work. According to Kuo et al.[79] technological innovation increases hotel competitiveness, and eventually, employees feel proud and empowered, creating a state of happiness and well-being.

During the pandemic, hygiene and cleanliness have received a lot of attention in hotel service recovery[80,81]. Hygiene and cleanliness have been major determining factors for guests' hotel choices[82]. According to Hall, Scott, and Gössling[83], post-pandemic safety and security for hotel employees will be the new norm. During this pandemic, many international hotel brands have adopted technological innovation to improve their service offerings[84].

The F&B service and housekeeping tasks are more tedious, tiresome, and time-consuming, unbalancing the health and happiness of the employees. To lessen the tedious jobs, a variety of service robots with the capabilities of guides, hosts, utilities, cooks, waiters, room attendants, and bellboys are the latest discovery of technological innovation[85]. Service robots, in particular, are more effective at decreasing work-stress levels, hence helping to improve mental and physical well-being. The pandemic has brought a paradigm shift in traditional service delivery, service creation, and service escapes through the application of artificial intelligence (AI), thus restoring employees' happiness and well-being. Innovation has rightly transformed monotonous human services into contactless services, minimizing employee fatigue.

Presently, hotels are drawing attention to their employees' health, as long working hours cause sickness and mental pressure[86]. This arises due to untimely food intake, lack of exercise, and sleep. However, COVID-19 is an eye-opener for the health and well-being of the employees. The COVID-19 pandemic has influenced hotel employees' lifestyles to a greater extent, emphasizing their physical and mental well-being. AI, robotics, 5G, and the Internet of Things (IoT) have reduced employee stress by facilitating the bundle of work in a twinkle of an eye. Hotels are emphasizing more employee well-being programs such as meditation and yoga programs, digital detox and fitness programs, and healthy diet and sleep hygiene programs.

COVID-19 has opened up a new avenue for eco-tourism and wildlife touring for employee well-being to maintain harmony among employees and nature[87,88].The hotels will strive to restore the confidence of the employees by providing in-house medical facilities. In this context, the future of medical hotels offering both job and holistic treatments to employees and customers is noteworthy[89–91].

4.2. Micro level: Hotel employees

The micro-level approach is a win-win situation both for the organization and hotel employee well-being, both positively and negatively. The hotel's revenue has declined enormously, resulting in a severe financial crisis and many employees being furloughed or dismissed[92]. Hotels have adopted product process innovation for cost efficiencies and employee turnover during the pandemic[93], which was a positive sign. Chaturvedi[94]pointed out that to survive during a crisis, many hotels have started dismissing their extra staff, reducing salaries, and squeezing the shift timings.

Therefore, gradually employee well-being has diminished due to the shortage of money, leading to tension and despair[95]. To some extent, employees are firmly confident that technology could facilitate their jobs, simultaneously revealing a higher proportion of dejection and dismissive[96]. Similarly, according to recent

research, employees who think technological innovation poses a danger to their job security may suffer from social phobia and panic[97].

Technology has deteriorated the quality of interpersonal connections between employees and organizations. Due to the prolonged lockdown and virus phobia, hotel dine-in services have shifted to take-away or home delivery systems, arousing fear of job loss and a financial crisis negatively affecting employee well-being. Therefore, hotel businesses have implemented social distancing to reduce contamination risk by altering the operation of the shift[98].On the other hand, social distancing has reduced employee turnover, the supply chain has been minimized, and the menu has been modified to minimize cooking and delivery time.

All these have enhanced employee creativity and innovation at the individual level, ultimately offering mental peace and happiness, which are bare needs during the pandemic. Moreover, due to the prevalence of the takeaway service model, kitchen, and delivery staff's physical well-being has been attained to some extent. Skills and competence (i.e., abilities, proficiency, creativity, innovation, knowledge), cooperation, coordination, support (social, work), and self (personal factors) have also played a pivotal role in bringing employee well-being to the micro level.

The skills have been harnessed, positively influencing employee well-being[99]. Technological innovation for service delivery has played a new role in training and upskilling financial and mental well-being. In the long, the run adoption of new skills will enhance the emotional and intelligent well-being of the hotel employees.

Support from the hotel owners' side in the form of safety, security, and health protection, as well as imbibing innovative technological devices and applications for service continuity, has created mental peace[100,101].The major international hotel chain has extended its financial and job support during the business crisis. Similarly, support from the hotel's top-level managers is one of the most influential factors for employees' social well-being. In return, social well-being enhances happiness, hence improving employee overall fitness[102]. Significantly, researchers also identified that support from the social front helps in restoring a positive mindset. During the pandemic, empathy and teamwork have been the two toughest pillars for overcoming stress[103] and strengthening employee emotional well-being.

At last, employees' well-being is driven by their approach to the crisis. The personal quality of an individual plays an important role in dealing with fear and anguish during a crisis[104]. Thus, due to service disruption, many workers think that losing their jobs increases mental anguish and frustration[105].

5. Discussion

Research theme and way forward

Based on the framework, the present researchers propose two emerging study areas that might be addressed in future research centered on hotel organizations and employees. As shown in **Table 3**, the first theme is "realistic" (short-term by nature), and it addresses the ways and means of strengthening and cultivating employee well-being in crisis time. The second theme is very "pragmatic" (long-term by nature) and comprises the question of how hotel services and employees are prepared for the future crisis. Investigating the research questions created around these themes is complex, as the pandemic is not constant, and hotel service delivery closely follows the human sentiments.

Table 3. Research questions considering two levels of employee well-being perspectives.

Realistic (short duration nature)	Pragmatic (long duration by nature）
Macro factors • How will the hotel offer quarantine facilities if an on-duty employee is suspected of being COVID-19 positive? • How do local authority and government safeguard the hotel organisation and their employee well-being? • How can the hotel organisation stand with social distancing as the services are rendered by the human touch? • How will small hotels adopt technological innovation considering employee well-being? • Which ways does the adoption of technological innovation protect employees from the fear of a pandemic? • How long can human-machine touch services be sustained in the hotel industry? **Micro factors** • How will the hotel address the technological fatigue for the mental peace of the employee? • What benefits will the hotel afford for enhancing skills and knowledge for interfacing automation services? • What stipulated wellness activities will hotel provide to better equip their employees to face crises? • How will the employees cope with technological adoption for service delivery in the beginning? • How will the employees address the service disruption during service delivery to the customers? • What type of personal characteristics can help employees face the severity of the pandemic while working at hotels?	• What effective measures should the hotel take to enhance mental health? • What long-term steps need to be taken by the hotel to msintsin employee health? • How do the hotels need to design theirg hotel health care facilities for employee safety? • What will be the future strategy for customer relationships, technology, and employees in order to impart personalised services? • How will the hotel predict the future pandemic and other contagious diseases for employee well-being? • What would be the hotel organisation's resilience technology-based economy for sustaining employee well-being? • How can the hotel redesign their service delivery process for future hotel services during social distancing? • How will technological innovation work for social distancing for hotel guests during the pandemic? • What features does the future hotel possess to create hotel healthcare attributes for combating crisis? • How will the hotels afford huge investment and manpower for adopting technological innovation? • What precautions will the hotels adopt during the service failure of the technology? • How will the hotel design the self-service technology as well as home delivery services? • How will the hotel support the employee and technology simultaneously?

6. Conclusion and implications

6.1. Theoretical implications

The pandemic has resulted in a significant decrease in demand for hospitality organizations; hence, the service implications are enormous.

Indeed, the COVID-19 pandemic has caused a huge worldwide social and economic catastrophe, causing massive service suspensions. While social isolation is designed to minimize virus spread and enhance community harmony, it has badly affected the mindset of many employees. This present study asserts that a comprehensive analysis of diverse macro and micro variables is required to properly comprehend the influence of the pandemic on employee well-being. The study findings revealed by Shin and Kang's[10] state that technological innovation helps reduce the overall occupational hazards in the workplace, and this is commensurate with the present study. The importance of technological innovation has been the outcome of the study and has been implemented for service delivery in hotels. While the values of hospitality services have historically been described as "high-touch and low-tech", this study may convert hospitality services into "low-touch and high-tech" experiences that influence employee well-being positively[10,106].

6.2. Practical implications

The research questions might serve as stepping stones not only to help workers affected by the crisis but also to reduce detrimental effects on their well-being.

The theme discussed in the present paper might be a way forward for hotel organizations to imbibe technological innovation to combat the crisis. Besides numerous highlights in this paper, disaster and hazard management is the most prominent topic that needs to be addressed and investigated, as hotels, employees,

and customers are the prominent victims of the pandemic; hence, this paper will be useful for future studies of employee well-being. This paper will force researchers and practitioners to vividly examine the impact of the pandemic, technological innovation for service delivery, and the ultimate influence on the well-being of hotel employees.

Needless to say, the framework developed by the researchers will be a beacon of light to mitigate the darkness of the pandemic if adopted and practiced in a relevant way, as well as open a new platform for employee well-being during the crisis.

Conflict of interest

The author declares no conflict of interest.

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