



Challenging Entrepreneurs in Using Transformational Innovation Technology in Hospitality Industry Post Covid-19

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Abstract

The use of technology is important to bring new standardization in hospitality industry during and post covid-19. The hotel industries adapt mostly contactless technology to conduct hi-tech and low touch scheme. However there are some challenges in using new technology adaption in which the hospitality industry should be ready for. The purpose of this paper is to identify the most important challenges in hospitality industry technology which should be applied in post covid-19. Literature review is the research method used in this paper, and the subjects are the hotel industries using new adaption technology in United States, Asia-Pacific and Europe. Findings of the research are the lists and explanation of the most challenging new adaption of technology in hospitality industries post Covid-19 such as cloud technology, hybrid meeting services and touchless guests journey. Those findings are hoped to be applied in Indonesian hospitality industries. Further research should develop more information about the transformational technology challenges in hospitality industry from the guests and employees' point of view.

Keywords: *Entrepreneurs, Standardization, Hospitality, Technology, Covid-19*

Introduction

Over the years, the use of technology has revolutionized in the world and daily lives. With all the revolutions of technology, it has made lives easier, faster and better. It is also necessary to put technology in the workplace, since it surely used as a smarter movement. Covid-19 has been hitting the world, in this case the hospitality industry suffer incredibly hard. In Europe The global industries had affected differently by the Covid-19 pandemic in many sectors. Hospitality industries, especially hotel industry had better performance in short term rentals than other hospitality industries. The data

from EU Parliament showed in 2020 that occupancy in hotel industry extremely lost 54% with the daily average showed 18%. The high turnover data is also shown by 30% in food and beverage industry. The most affected hospitality industries during pandemic are event organizers, travel and tour operators. (European Parliament, 2021). According to data from World Health Organization (WHO) in March 2020, there are big countries affected the most by Covid-19 such as China, Italy, Spain and USA. The highest case data of pandemic shown in USA confirmed 23,311,719 cases, within 806,410 deaths (WHO, 2020). The airborne has contaminated by the virus and affected badly to human inhalation (van Doremalen et al., 2020). The entertainment places have been infected as well. The speed up of new technology adaptation in this case become the most important part to grow the tourism and hospitality business during Covid-19 (Lau, 2020). Covid-19 has indeed expedited the immersion of new technologies and applications within tourism and hospitality operations. Technology novelties that might have been mainly designed for launching as innovations or extra services are suddenly becoming obligations in a time where some people are cautious of traveling (Ivanov et al., 2022). This also becomes the part of changing attitude in traveling and in hospitality operations which is necessary to implement the technology during pandemic.

Thus the hospitality industries should think about the transformational technology that necessary to be used. The use of technology is important to bring new standardization in hospitality industry during and post covid-19. Smart capacities and services that were previously considered add-ons to the guest experience will quickly become requirements in the post-pandemic hospitality space. The health and safety risks of the virus combined with travel restrictions and the economic downturn have forced every hoteliers into immediate action.

Although the Covid-19 has become the scariest case for this industry, the industry of tourism and hospitality have a chance to restart and recover by maintaining the customers' trust and still build the brand image for the company. The protocols of Covid-19 that government give in every countries for new normal adaptation such as sanitizing and social distancing including the suggestion of the touchless technology, however could be the solution for the business to still go on (Rahimizhian & Irani, 2021). The technology solutions suggested as well in this pandemic are replacing all the stuffs in business hospitality area to become less touch or even touchless such as QR codes, contactless check in, mobile room keys, touchless payment and ordering app (Hudson, 2020), as well as 5G and Artificial Intelligent (AI) could help hotel industry to maintain their business with efficiency and safety to provide swift check-in and facial recognition payment (Lau, 2020).

Since there are so many new technologies to keep track of, it can seem overwhelming to adapt. Eventhough the technological advances are now influencing the tourism and hospitality sector, but the innovation and

technology adaption's research are not yet complete for the technology is growing so fast (Wang, 2015).

All of these new technologies are designed to make life easier. Even though it may not feel intuitive, learning how to use the new adaption of technology needs some intructions and practice. However whether it is old or new, the pro and cons in all technologies are still exist. Hotel management should always think about what to come in the next when it is related to new technologies.

Literature Review

Transformational innovation technology in hospitality.

Technological transformation is a process where technologies create disruptions, activating strategic responses from organizations aiming at modifying their value creation paths while managing the structural changes and organizational difficulties that affect both positive and negative results of this process (Vial, 2019). This change seems to have huge impacts due to technology developments and emerging new tourist demand in marketing and operations (Salazar & Teare, 2018). The use of information technology (IT) within the hospitality industry is driven by the desire to refine customer service, improve operations, increase revenues, and minimize costs (Huo, 1998). Siguaw & Enz (2000), mentioned the technology in hospitality industry in 2000's such as internet reservation, management e-mail system, in-room modems, voice mail, interactive television guide, teleconferencing, automatic teller machines, in-room internet access, cell phone rentals and in-room fax machine. The increasing dependence on digital technology is acknowledged in many industries and tourism is no exception (Buhalis, 2020).

According to Hinings et al. (2018), transformation in the technology is the outcome of different digital innovations that bring about novel actors, structures, practices, and values, that can change, disrupt, or complement existing rules of the game within organizations or industries. The influence of these digital innovations is reflected in firms' operational models as well as firms' relationships with customers (Reinartz et al., 2019). According to Revfine.com (2022), the new technologies adaption in hospitality industry are Voice Search & Voice Control, Contactless Payments, Robot in Hotels & Restaurants, Chatbots, Virtual Reality, Mobile Check-In, Recognition Technology, Artificial Intelligence, Internet of Things (IoT), Augmented Reality, Cybersecurity, and Big Data.

Yet the new paradigm of smart tourism and hospitality (Buhalis, 2020) challenges companies to make significant investments in advanced technology. Most existing technology adoption research in tourism looks at the decision-making processes of individual decision-makers or organizations in isolation and from a purely rational point of view. As such, it ignores the embeddedness of organizations in complex institutional environments and the possibility of goals beyond economic efficiency. The thight competition in hospitality industry make it necessity to provide the

latest technology trends. The hospitality industry should significantly spend the efficient cost, reduce workloads of staff, gain higher potential revenue and maintain the customer experience (Revfine.com, 2022).

Touchless technology in hospitality

Zero User Interface (UI) is facilitated by touchless technology that the use of this technology could fit on the hygiene requirements in this pandemic. Touchless Touchscreen technology is also known as Touch-me-not technology. Such system's structure can notify the movement of hand in front it and diagnose the kind of action performed (Gagana et al., 2018). The definition of Zero UI is a interface's control that could be able for user to interact with the technology through voice, gesture, hand interaction, eye tracking, facial recognition and touchless fingerprints. The device's examples of Zero UI are smart devices, IoT sensors, smart appliances, smart assistants and consumer robotics. These devices are most popular adopted Zero UI in the industry which could control the voice and gesture (Iqbal & Campbell, 2021). These devices could be the hygiene interaction's solutions in new normal with the advance of computer vision and machine learning for the use in image recognition and natural language (Iqbal & Campbell, 2021). This technology can be controlled with the fist postures and gestures and uniquely, with the absence of touch. It also allows the user to turn any suitable surface into multi-touch interface. Meanwhile Hotel Industry is gearing up to deliver a contactless personalized experience to guests with incredible features like check-in & check-out, mobile key, multilingual chat, in-room ordering. Ready-tousemobile platforms empower a wholly safe and delightful experience. The contactless payment which is the one of the most popular technology trends, give many advantages for hospitality industries such as hotel, resort, restaurant and cafe to attract the costumers' trust during pandemic. The benefits contactless tech are speeding up payments method, improving customer satisfaction, easily compatible with loyalty programmes, and reduce human-to-human contact (Revfine.com, 2022).

Cloud Computing

The Hospitality Industry, like any other service industry, can gain the ability to monitor, test, and implement better solutions to improve guest experience, streamline operations, and provide better data security by migrating their applications to the cloud. It also eliminates the need for manual data sharing and processing, therefore reducing the human-error factor. Cloud technology also helps to accelerate some of the processes such as faster check-ins/check-outs, which results in a better customer experience (Cloudkinetics.com, 2022). Cloud computing technologies are defined as technology resources and services that enable storing data with shared information on the internet using web services, accessing to hardware, software applications, processing power and data, offering in real-time with internet infrastructure in a server connection, quick addition of resources and easy extraction when not in use (Mell et al., 2011).

Cloud-based software services can provide hotels with a variety of opportunities and advantages on criteria such as cost, quality of service, and flexibility (Yurtlu, 2021). Hotel IT decision makers must find knowledgeable and responsible cloud partners. While some of the big cloud providers can deliver quality and reliable services, the cheaper and smaller providers may inescapably deal with operating problems such as overload capacity, delay, breakdown (Schneider, 2012). One of example cloud computing in Hotel Industry is cloudbeds (Hotel Tech Report, 2022). Hotels that use Cloudbeds log into it directly in a web browser like Internet Explorer or Chrome. This is a big advantage for hotels because you can access the application on any device. Implementing cloud-based software can make your operations more efficient, save time for your employees, and create more positive guest experiences. If you're still using traditional software that's installed on hotel computers, it's time to consider switching to modern, cloud-based software that's constantly innovating (Hotel Tech Report, 2022). Yurtlu (2021) mentioned cloud-based service in the hotel for marketing sector such as website creation and design, digital production management, channel manager, online reservation module, search engine optimization (SEO), mobile compatible service, competitor price, tracking software, detailed analytical reports etc.

Hybrid Meeting

Virtual and hybrid meetings are being seen as an enhancement to F2F meetings and are now being viewed as acceptable ways of doing business (Sox et al., 2015). A hybrid event involves a mixture of physical events with elements of a virtual event usually runs simultaneously and with overlapping content and interactive elements (Sox et al., 2015). Hybrid events offer a mix of in-person and virtual experiences (Microsoft, 2022). To improve hybrid meeting technologies, we must better understand the special problems of meeting continuity that arise from hybridity itself. These problems are often revealed in practices of inclusion and exclusion of remote participants in hybrid meetings (Saatçi et al., 2020). Practices evolve in hybrid meetings requires moving from the individualistic actor-activity based approach to communication in the meeting to a phenomenon-centered approach to the meeting itself.

Artificial Intelligent

Traditionally perception of tourism and hospitality industry as relying on personal contact and interplay between a host and a guest is greatly challenged by the disruptive development and impact of AI devices. Nowadays, AI is more and more infused into the guest's service experience (Soares et al., 2020). Conversational AI refers to the set of technologies that enable human-like interactions between computers and humans through automated messaging and speech-enabled applications. By detecting speech and text, interpreting intent, deciphering different languages, and replying in a fashion that mimics human conversation, conversational AI can

converse like a human. This process combines Natural Language Processing (NLP) with conversational AI machine learning (Hijiffy, 2022).

Hospitality customers in the digital era expect the quick services and responses from the industry through the diver of applications or digital technology. The fact, is the staff will find the difficulty to do that without the help of technology. But with the new trends of technology adaption in AI, such as chatbots which could help the customers to answer and understand the questions instaneoustly without the hand of hotel staff and also add the customer experiences. AI could give the informations of hotel areas within the data analysis (Revfine.com, 2022).

Robot

In the physical distancing case, robot could be used in the hospitality industries such as cleaning, room service, food delivery, autonomous vehicle robots practically could remove distant between customers and staffs which can affect the infections. This could be also the good experience and the attraction for the customers while visiting the hotel (Jacobstein & Kragic, 2020). From a managerial perspective, service robots may help to keep a high level of physical distancing which helps to provide a more secure service to tourists during a pandemic (Seyitoğlu & Ivanov, 2020). In the post-viral world, the use of robotics may be widespread as people would be more concerned about their safety; safety and security may be one of the main factors that influence tourists' choice of a destination and particular tourism/hospitality service provider (Hall et al., 2020). The legal requirements and companies should develop the hygienic standards and a detailed cost spending and profitability perform in sources of service robots (Ivanov et al., 2022).

Research Methodology

Literature review is the research methodology used in this paper. A literature review can broadly be described as a more or less systematic way of collecting and synthesizing previous research (Baumeister & Leary, 1997). An effective and well-conducted review as a research method creates a firm foundation for advancing knowledge and facilitating theory development (Webster & Watson, 2002). Consideration of prior, relevant literature is essential for all research disciplines and all research projects. When reading an article, independent of discipline, the author begins by describing previous research to map and assess the research area to motivate the aim of the study and justify the research question and hypotheses. This is generally referred to as the “literature review,” “theoretical framework,” or “research background.” However, for a literature review to become a proper research methodology, as with any other research, follow proper steps need to be followed and action taken to ensure the review is accurate, precise, and trustworthy. As with all research, the value of an academic review depends

on what was done, what was found, and the clarity of reporting (Moher et al., 2009).

In this research, the authors are looking for the literature review from the transformational technology in hotels which adapted the new technology post covid-19 in United States, Asia-Pacific and Europe. This research evaluates the implementation of the changing technology and identify the themes and gaps of previous research about the transformational technology and innovation also its challenge in hospitality industry as well. Thus research will find the most challenging and important transformational technology in the hospitality industry as well as it is the challenge for entrepreneurs in the hospitality industry to adapt the most effective new technology during and post Covid-19.

This research does not intend to compare which theories are better applied than the others. However the theories reviewed in our study may support the transformational innovation technologies that can be applied and suitable in hospitality industries in 2022 as pandemic situation solutions, and those technologies innovations are hoped to be the future trending transformational technologies innovations. The authors will recommend that similiar study should try to use Meta Analysis for further study.

Results and Discussions

Maintaining the very latest hospitality technology trends could help every hospitality sector to compete. With the technology, the hospitality business should struggle and go on in this pandemic. Some of technology applied in the right place may reduce the cost, increase the revenue as well as gaining the customer experiences. The accuracy of work in the hospitality industry will also help the staffs providing services to the customers with the latest technologies and innovations. The technology however can make the business easier to run in this Covid-19 era while the customers expecting the health, safety and hygiene services and products in the hospitality industry, but again there are also gaps and challenges appear at the same time as the new technology adaption come into hospitality industries during Covid-19. The research has found the new adaption of technologies in some hospitality industry in US, Asia-Pacific and Europe. There are some literatures related to the insight of transformational technology as shown in the table 1.

Table 1. The Literature Review of Transformational Technology

[Source: Authors (2022)]

Authors	Discipline	Research Method	Findings
(Lau, 2020)	Information Technology & Tourism	Interview	adapted and introduced new technology in covid-19 era such as DeLone and McLean's Information System Success Model has been applied, Live-stream

			promotion and live-stream conference for promotion, 5G technology, Wi-Fi 6, facial recognition
(Rahimizhian & Irani, 2021)	Technological Innovation	self-reported survey design, ADANCO software	Tourism inclination has both direct and indirect impacts on revisit intention through innovativeness
(Soares et al., 2020)	Tourism Technology	Qualitative approach	Large scale across several items related to technology adoption practices and uses of technological tools.
(Buhalis, 2020)	Tourism Technology	Systematic research	Technology-empowered tourism experiences, Ambient Intelligence (AmI) Tourism (2020-future) is driven by a range of disruptive technologies, smart environments give tourism sector many advantages
(Iqbal & Campbell, 2021)	Technology	Overview	Zero UI technology and outlined the crucial role in the technology adaption as a touchless technology
(Seyitoğlu & Ivanov, 2020)	Technology	Overview	Service robots create a technological shield between tourists and employees that increase the physical and emotional distance between them

Transformational Technology in Asia-Pacific hospitality Industry

The opportunities of using the new technology adoption are suggested in the region's 2021 survey of the demand of hospitality industry in the hotel. Lau (2020), with the research titled *New Technologies used in Covid-19 for Business Survival: Insight from The Hotel Sector in China* found 9 hotels in China which adapted and introduced new technology in covid-19 era such as DeLone and McLean's Information System Success Model has been applied, Live-stream promotion and live-stream conference for promotion, 5G technology, Wi-Fi 6, facial recognition. The most increased technology transformation that has been proved for practitioners is AI. The facial recognition and contactless check in experience ease the customers for check in process without contacting and giving access to customers directly to the hotel room and Robots help to adopt "contactless" options as well,

The robots not only help protect guest health and prevent the virus spread, but also enhance service quality and customer satisfaction. (Merkac, 2022) found that South Korea-based telecom company KT Corporation released its second gen GiGA Genie hotel robot designed to help improve service delivery. The robot named "N Bot" is used at the Novotel Ambassador Dongdaemun Hotels & Residences. It goes around hotel rooms delivering amenities such as fresh towels and water bottles, and other amenities to guests living in the hotel. In May 2020, according to (Microsoft, 2022), Murray Bell's global experience company, Semi Permanent, was preparing to launch the World Sports Creativity Sessions in partnership with Dentsu and the Tokyo 2020 Olympic Committee. The event intended to attract a new, younger audience to the Games explored the role of creativity in sport. Originally intended for live audiences, it consisted of conversations between world-class athletes (track star Carl Lewis, soccer captain Carli Lloyd) and famous creative figures (explorer Chris Burkard, bionic pop artist Viktoria Modesta). Pivoting to digital, Semi Permanent integrated these talks in remote spaces with hosts on the ground in Tokyo. The World Sports Creativity Sessions hosted virtual conversations between world-class athletes and famous creative figures to explore the role of creativity in sport. The new hotel operation strategies and technology could express the high interest for the customer during pandemic. In Asia-Pacific, 42% customers considered the self-service options for check in. 38% Asian customers experienced also the technology massage.

Transformational Technology in U.S hospitality Industry

According to (Batalla, 2021), in 2020, the U.S. Construction Pipeline Trend Report by Lodging Econometrics (LE) reported the 5,216 hotel projects with approximately 650,222 rooms built the constructions and has been planned for next twelve months. Although the numbers are lower than usual, this data show the great statistic during Covid-19 in the hotel sector while the investment on the hospitality industries are being uncertain, especially for the entrepreneur's leaders and investors to make a decision. On the other hand the technology help them to analyze the data which provide real time information and take the right decisions. In summer 2021, Black lifestyle magazine ESSENCE also leaned into audio with a live-streamed sound bath, one of several wellness activities in the lineup at this year's ESSENCE Festival of Culture, which also included career coaching, gospel music performances, and a virtual marketplace of Black-owned businesses. The event also included satellite in-person shows throughout communities in New Orleans, spreading investments across the city while keeping participants safe (Microsoft, 2022).

Transformational Technology in Europe hospitality Industry

(European Parliament, 2021) found the implemented of transformational in hospitality and tourism industry during the pandemic in Europe. The technology adaption is different in each countries. In Europe, the nordic countries have the higher technology adaption than eastern and southern countries. Marketing and sales are the most related activities using the new technology, however these lacked of the technology adapted such as data

analytics, cloud computing, artificial intelligence, virtual reality, geo-localization etc.

Ireland has introduced the developing leaders for hospitality and tourism programme for managers and employees. The programme including how to use the digital technologies for employees in customer care, communication, strategic management and green skills. They also have the collaboration with Fáilte Ireland (the National Tourism Development Authority), the State Agency responsible for further education and training (SOLAS), and the Irish Hotels Federation (IHF).

The progress of technology transformation in Europe data shows that 69% executives for the adoption of technology is still lower than respondent globally.

Gaps in adopting new technology post Covid-19

Eventhough the transformational technologies have many advantages in this covid-19 era, there are also gaps in adopting new technology in hospitality industries. The challenges from the COVID-19 pandemic require hotel restaurants to reinvent their business structure and narrow down their product offerings (Lau, 2020). Currently, brands are using live streaming to market and sell products. These new sales and marketing mechanism pose a challenge to the hospitality industry. The hotel has to understand: Who are their viewers? How does live streaming work? How can hotel brands use app for marketing? How can the hotel convert the traffic to revenue? To mitigate the pandemic and accurately identify people with the virus, countries across the globe are tracking smartphone data and using AI for face recognition and scanning body temperature. Bringing customer data online and connecting them to local authorities introduce enormous efficiencies and applications. However, it also introduces threats like cyber-attacks and security breaches (Lau, 2020).

The new adaption technology challenges for Entrepreneurs in Hospitality Industry in Indonesia

From those transformational technology examples described earlier in this paper, there are some tranformational technology tools that may be applicable in Indonesian hospitality Industries such as cloud computing, AI, Contactless check in and out, Face Recognition and robots due to the effectiveness, economical, culturally adaptable, and those transformational technology tools seem to follow the CHSE (cleanlines, health, safety, enviroment) regulations suggested by the Ministry of Tourism and Creative Economy of Republic Indonesia

However, there may be some problems arising in our hospitality industries when using those tools such as human resources who lack of capability in using those tools. Other example may lie on the costly tools such as Robot and other softwares. These can be solved by giving some training to the hotel staff in operating the tools, and the costly tools may be paid by installment As (Subai et al., 2020) mentioned that hotel operators are beginning to pay closer attention to the potential benefits of artificial intelligence (AI) and its applications, such as robotics, in hotel management practices.

Conclusions

As the new technologies adapted in some hospitality industries during Covid-19, the contactless technology, AI, hybrid conference and robots are listed as the important transformational technology which have many advantages and can be adopted in Indonesia. To implement those new adaption, the entrepreneurs in hospitality industries should take the smartest steps of what kind of new technology they should offer to the hotel managers or to the tourism government in Indonesia.

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