The Leading-Edge Technology Factors in Hotel Management in the Post-Pandemic

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Abstract

The *outbreak of covid 19 has negatively impacted the hospitality industry for over one year. Many hotels were prompted to come up with various strategies to counter the effect of coronavirus pandemic on hotel operations, including proactive services to guests, access to information, and financial management. This study aims to study the effects of a new sense of security, AI smart room assistant, digital labour as first-line defense, and rethinking reward systems on hotel management post-covid-19. In this paper, the implemented research methodology involved a primary quantitative research design that used an online questionnaire survey to collect data from respondents that have stayed in hotels for the past 6 months between the age of 18-44. A Non-probability sampling technique was used to recruit participants in the study. Data analysis was conducted using IBM SPSS Statistics V26 forms of software. The results and findings of the study indicate that there is a significant positive relationship between the digital labour as a first-line defence and rethinking reward system toward hotel management post-pandemic. While the hypothesis of existence of a significant positive relationship between a new sense of security and AI smart voice assistants toward hotel management post-pandemic was rejected by the findings of this research.*

Keywords: sense of security, AI smart room, digital labour, reward systems, hotel management, post-covid-19

Introduction

The current Covid-19 pandemic has vastly influenced and caused an impact on the hospitality industry in the past year. Many hotels are undertaking proactive steps within the industry to mitigate some of these impacts despite the continuing implications of the virus (Papadopoulos et al., 2020). The pandemic has significantly impacted hotel operations, proactive services to guests, access to information, and financial management (Aharon et al., 2021). Despite the impacts, various industries have developed efficient and practical approaches to employ and adopt multiple strategies. Since early-2020, there has been an unprecedented growth in adopting the new technologies for various hotels in the hospitality industry (Beck, 2021). Even though the current pandemic is temporary, it has led to leading-edge technological factors in hotel management, which would determine the future of hotels in the post-pandemic.

Lockdown and containment measures have been implemented by governments since the onset of the epidemic, such as social separation. These measures have forced every hotel within the hospitality industry to immediately improve their services and place them in the best position to survive after the pandemic (Qiu et al., 2020). Various technologies are currently in adption as multiple hotels within the industry work towards full occupancy following reopening guidelines because of the pandemic (Filimonau et al., 2020). All hotel departments have leveraged these technologies to facilitate the guest experience, manage post-pandemic protocols, streamline operations, and improve communication between guests and staff (Chadee et al., 2021). This aspect means that there are various reasons that hotels must apply recent technological trends in their management in the post-pandemic. The importance of improved technology in hotels during the pandemic is to enable staff to provide superior services to the guests while maintaining the pandemic protocols. The study will facilitate an

understanding of how these technologies have and will continue to shape hotel management, especially in the post-pandemic.

Theory of the Research

Covid-19 has caused changes in visitors' behaviours, which have impacted their attitudes towards hotels. Given the Covid-19 protocols, these changes in customers' attitudes and behaviours have encouraged the hospitality industry to diversify on maintaining the protocols and continue meeting customers' expectations by adapting new technologies. Therefore, the underpinning theory was considered as the theory of this research because the significance of the theory in this study is the adoption of the Technology Acceptance Model used to predict the acceptability of a tool and identify modifications that would increase acceptability (Taherdoost, 2018). The model postulates that the acceptability of a new technology is determined by its ease of use and perceived usefulness through the theory of reasoned action. Perceived usefulness in this context refers to the degree to which an individual believes that the technology will improve performance and satisfaction. Perceived ease of use refers to an individual's belief that the implemented technology will be effortless. As demonstrated by the theory of reasoned action, the technology acceptance model postulates that behavioural intention determines the adoption of new technology (Momani & Jamous, 2017). The behavioural intention is determined by the attitudes of individual's attitude towards the use of the technology. The theory is applicable in this research because it helps understand how changes in visitors' behaviours towards hotels during the current pandemic have resulted in the adoption of technologies in hotel management.

Based om the model in figure 1, this research deduced that the Covid-19 pandemic led to changes in the behaviour and attitudes of customers towards hotels. For example, most customers fear an infection from the Covid-19 virus because of poor maintenance protocols to increase health and safety (Robina-Ramírez et al., 2021). These attitudes and changes in

consumer behaviours encourage the hotels to develop technologies that would help increase safety and health and capture Covid-19 protocols. This way, the hospitality industry designed several technologies that have enhanced efficiency, health, and safety. Therefore, the model helps in understanding how hotels unprecedentedly adopted digital technologies.
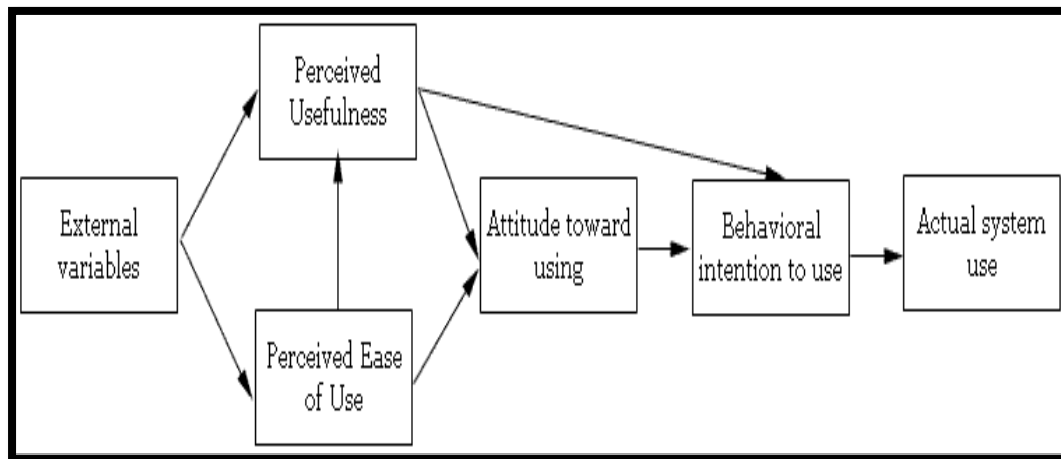

Figure1: Technology acceptance model (Lai, 2017)

A new sense of security

During the pandemic, many hotels have introduced wearable technology that gained popularity to monitor guest activities, control the spread of the pandemic, and manage contact tracing (Hidalgo et al., 2021). This powerful access has multiple responsibilities, requiring many hotels to invest in cyber security. Before the pandemic outbreak, only a few hotels implemented cybersecurity systems to manage and monitor guest activities (Li et al., 2021). However, because the pandemic has helped hotels to transfer most of their operations online, there will be an increased need for the hotels to implement systems that would ensure guests' data are safe (Sapta et al., 2021). There is a high chance that this new sense of security would remain in place in the post-Covid-19 pandemic. However, cyber security is equally a priority for hotels because they have invested in online platforms. Guests' apps contain confidential data regarding each customer, which might land in the hands of fraudsters. This aspect means

that the Covid-19 pandemic also pushes hotels to implement security practices that would safeguard these customer data while complying with federal, local, and industry-specific regulations (Khan et al., 2021). Given the tech-savvy generation, people need to understand that their data would be safe and how organizations are using their data. The apps have also provided more details on the rules and regulations that explain how the hotels would use these customers' data and the possible consequences of the breach (Romero & Lado, 2021). As the pandemic continues to surge, reopening measures are in place, and hotels need to adopt these protocols. This aspect implies that the devastating consequences will leave technological innovations among the hotels in their wake.

Artificial Inteligent (AI) Smart Voice Assistants

During the outbreak of the Covid-19 pandemic, many hotel brands began installing Artificial Intelligence voice assistants. Examples of these AIs that have been implemented in various hospitals are the Amazon Echo and Alexa in newly updated Smart Rooms (Kim et al., 2021). The current Covid-19 pandemic led to an increased demand for contactless services as one of the containment protocols. This aspect led to various hotels adopting AI to offer customers advanced, safe, and attractive services. The focus of hotels during and after the pandemic is on improving customer services and experiences in the hospitality industry. The visitors can book appointments and get restaurant recommendations. As the world is expected to recover from the current Covid-19 pandemic, customers' demand for travel might increase (Zeng et al., 2020). The technology can respond to various calls and ensure that customers are immediately attended to and have no wait. As the Covid-19 pandemic continues, customer services become more important (Wachyuni & Kusumaningrum, 2020). Therefore, the Covid-19 pandemic has helped hotels drive customer care efficiency, which means the pandemic has led to the introduction of a technology that would enhance customer experience.

Digital Labour as First-Line Defence

While many hotels were navigating through the influx of the Covid-19 pandemic and its related complications, some hotels introduced digital labour as a first-line defence. One of the major complications of the Covid-19 pandemic is labour shortages (Thomas et al., 2021). Containment and lockdown measures resulted in many hotels laying off workers to meet costs, leading to labour shortages. Later in 2020, digital touchless capabilities were rolled out to respond to social distancing measures. The importance of the technology is that it proved the capacity to empower and enable hotels to overcome the related complications brought by the pandemic. With digital labour as a first-line defence, guests stand a chance to remember when the government will lift the restrictions (Joshi & Gupta, 2021). The other major complications were the short-term focus on high bookings, which increased guests' cancellations and deferred stays. Hotels began to invest in integrated online booking platforms that assisted in implementing staff efforts and created a seamless and personalized experience to ensure guests have a positive brand experience (Chan et al., 2021). This integrated online booking was applicable across all aspects of guests' stay.

Rethinking Reward Systems

Because of the roll-out of the Covid-19 vaccine, many hotels and the government consider various travel habits as customer loyalty programs are upgraded. The major impact of the Covid-19 pandemic is on customer behaviours and attitudes on hotels (Jiang & Wen, 2020). Other customers believed that hotels do not have Covid-19 safety protocols; hence, they would not visit them. This aspect significantly affected their visitations. Customers from far regions resorted to local hotels, which hindered their loyalty, significantly losing customers during the pandemic (Sharma et al., 2020). Therefore, many hotels focused on investing in technology in this area as part of their new normal in the post-Covid-19 pandemic. The hotels often use

reward programs to incentivize returning businesses without alleviating first-time customers or overemphasizing various levels of guest perks. Before the outbreak of the Covid-19 pandemic, hotels used mobile Check-ins for loyalty reward members (Thomas-Francois et al., 2021). This aspect means that the current global pandemic allowed hotels to log guests' preferences and choices as data and share with the management to help personalize their stays. This feature means that in post-Covid-19, many hotels will be able to meet the specific needs of their customers by using guests' apps to collect information that would help them adapt to meet these specific needs (Pillai et al., 2021).

Research framework

This research expected to find the relationship between a new sense of security, ai smart voice assistants, digital labour as first-line defence and rethinking reward systems toward hotel management during the post-covid-19 pandemic through data collection (figure 2). The study defined relevant variables and mapped how they might have a significant positive relationship on hotel management post-covid-19 pandemic.

H1: There is a significant positive relationship between a new sense of security and hotel management post-pandemic.

H2: There is a significant positive relationship between AI smart voice assistant and hotel management post-pandemic.

H3: There is a significant positive relationship between a digital labour as first-line defence and hotel management post-pandemic.

H4: There is a significant positive relationship between rethinking reward systems and hotel management post-pandemic.
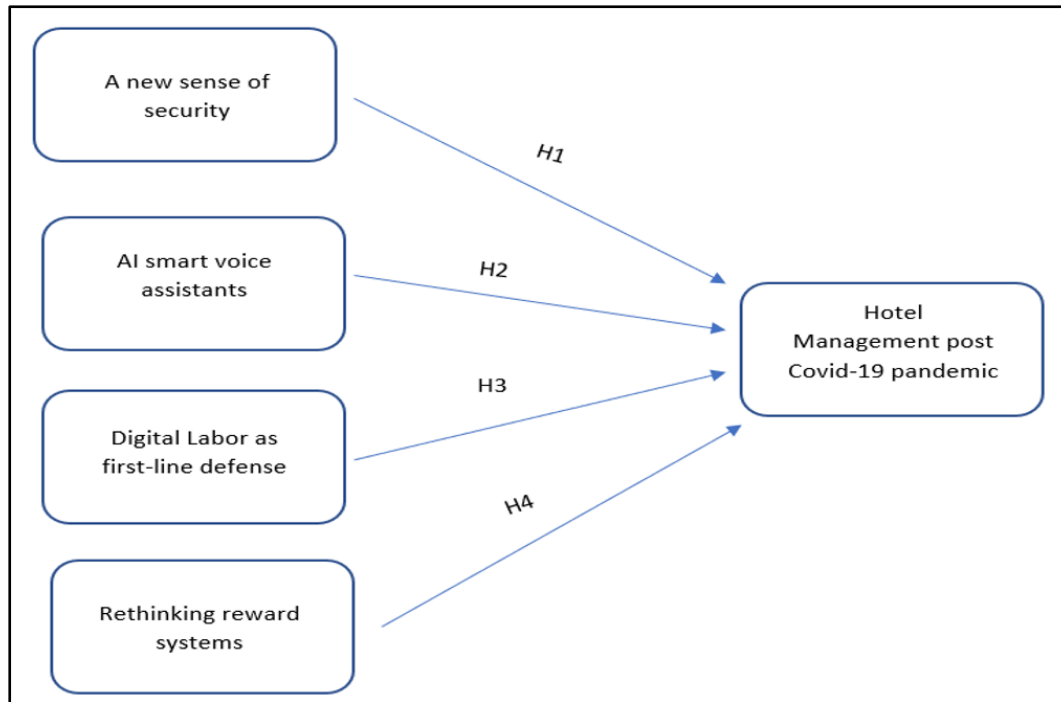
Figure 2: conceptual framework

Methodology

The following research is quantitative and used a questionnaire to collect data; This study was aimed at investigating how the leading-edge technology in the post-Covid-19 pandemic. Therefore, the study applied a positivist theoretical perspective to predict the future of hotel management in the post-Covid-19 pandemic based on the introduction of these technologies during the outbreak of the current pandemic. Numerical data were used in this study to describe, explain, and predict the outcomes of the perceived causal relationship. The research relied on quantitative design to determine the relationship between dependent and independent variables. The research will adopt a quantitative design because it effectively allowed the study to use descriptive statistics in interviewing the research participants. The numerical data obtained allowed the study to compare results from the research participants using inferential and descriptive statistics. Therefore, Questionnaire documents will be designed based on the Likert 5-point ordinal scale ranging. The research relied on a google

questionnaire survey to collect information from research participants. Questionnaires had been distributed through social media**.** In this study, quota sampling as a 'non-probability sampling' method such as snowball sampling was used to better focus on young adults in the population.

Characteristics of participants:

- participants through online surveys are young adults aged between 18-45 who have adoption capability towards technology

- The main geographical area for this study was Kuala Lumpur.

- The research participants in this study include employees, managers, operators, and staff or customers who have visited hotels during the Covid-19 outbreak.

- The research participants have worked or visited hotels during the current Covid-19 pandemic in the past 6 months.

Evaluation of research framework

The research had sampled 166 research participants through online surveys who were young adults aged between 18-45. The main geographical area for this study was Kuala Lumpur; it is the principal capital of Malaysia; hence, it has vast and huge hotels. The research participants in this study had include employees, managers, operators, and staff or customers who have visited hotels during the Covid-19 outbreak. The research participants have worked or visited hotels during the current Covid-19 pandemic in the past 6 months. The gathered data was analysed by SPSS program. The research used a sample of 30 participants to conduct a pilot test before collecting data from the research participants. The importance of a pilot study is that it allowed to correct issues that might arise in the actual data collection. Hence, it served as a mechanism to test the validity and reliability of the survey variables and processes. The research relied on Cronbach's Alpha to test the reliability and validity of the closed-ended questions in the

questionnaire survey; in addition, Cronbach's Alpha of 0.7 as good, 0.8 as better, and over 0.9 as best. According to table 1, all pilot test variables had a Cronbach Alpha of over 0.7, hence all were cleared for the study. Moreover, every variable had gotten a value above 0.7 which indicates a reliable value, with rethinking rewards systems and hotel management post covid-19 to be above 0.8, which indicated a very good value. The instruments used in this study were determined to be appropriate because of the reliability findings, and the topic was judged to be particularly significant in this field of study.

The overall demographic data of all 166 respondents with a percentage of 100 in the form of the table 1. The characteristics of the table includes respondents' gender, age group, highest level of education, monthly income & occupation. Firstly, the data of gender found that 103 (62%) of the respondents were male while 63 of the respondents were female (38%). This shows that most respondents were male in this study, having a 40 individual gap difference compared to females. Secondly, the age group of the respondents were split between ages 18-24, 25-34 and 35-44 years old. The one with the highest frequency would be the age group of 18-24 years old comprising 57.8% of the study. It is followed by the 25-34 age group with 36.7% of the study. The lowest age group was 35-44 and 45 & above with 9 respondents, 5.4% of the study. This shows that the participants in the study were younger age and only a few were middle age and above. Thirdly, the highest level of education of respondents were split between foundation, undergraduate, postgraduate, and professional papers. It was recorded that the highest frequency was the undergraduate education level with 105 respondents, 63.3% of the study. Followed by 31 respondents with postgraduate education encompassing 18.7% of the study. Foundation education level was found have included 25 of the respondents, with 15.1%. Lastly, those take have the education level of professional papers had a total of 5, which filled 3% of the study.

Characteristics	Category	Frequency	Percentage
Gender	Male	103	62
	Female	63	38
Age Group	18-24 years old	96	57.8
	25-34 years old	61	36.7
	35-44 years old	9	5.4
Highest level of education	Foundation	25	15.1
	Undergraduate	105	63.3
	Postgraduate	31	18.7
	Professional Papers	5	3
Monthly Income	Less than Rm2,000	97	58.4
	Rm2,001-Rm4,000	11	6.6
	Rm4,001-Rm6,000	26	15.7
	Rm6,001-Rm8,000	21	12.7
	Rm8,001-Rm10,000	10	6
	Rm10,001 & Above	1	0.6
Occupation	Student	95	57.2
	Part-time worker	7	4.2
	Full-time worker	62	37.3
	Unemployed	2	1.2
Total		166	100

Table 1: Descriptive analysis

Fourthly, the monthly income of respondents was recorded in the categories of less than Rm2,000, Rm2,001 to Rm4,000, Rm4,001 to Rm6,000, Rm6,001 to Rm8,000, Rm8,001 to Rm10,000 and Rm10,001 & above. Majority of respondents were categorized of having a income level of below Rm2,000, 58.4% of the study. Followed by Rm4,001 to Rm6,000 with 26 (15.7%) of the study, Rm6,001-Rm8,000 with 21 (12.7%) of the study, Rm2,001 to Rm4,000 with 11 (6.6%) of the study, Rm8,001-Rm10,000 with 10 (6%) of the study and 1 respondent (0.6%) of the study with over the income of Rm10,001 & above per month. Finally, the occupations of respondents were recorded from students, part-time workers, full-time workers and unemployed. Over 57.2% of the study were found to be students, totalling 95 of the 166 respondents. It is followed by 37.3% of the study of full-time workers with 62 over 166 of respondents. Part-time workers and unemployed hold minority with 7 (4.2%) and 2 (1.2%) respectfully.

As shown in table 2, p-value of new sense of security was insignificant at 0.460 as it has exceeded the minimum p-value of 0.05 which is an indication that the relationship between a new sense of security and hotel management post-pandemic to be insignificant. Also, p-value

for AI smart voice assistant was insignificant at 0.159 as it has exceeded the minimum p-value of 0.05 which is an indication that the relationship between AI smart voice assistant and hotel management post-pandemic to be insignificant. On the other hand, p-value for digital labour as first-line defence was significant at two stars at 0.001 as it is within the minimum p-value of 0.05 which is an indication that the relationship between digital labour as first-line defence and hotel management post-pandemic to be significant. p-value of rethinking reward systems was significant at two stars at 0.000 as it is within the minimum p-value of 0.05 which is an indication that the relationship between rethinking reward systems and hotel management post-pandemic to be significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.758	.298		5.893	.000		
	M_NS1	.065	.087	.054	.740	.460	.595	1.680
	M_AI1	.104	.073	.135	1.414	.159	.340	2.939
	M_DL1	.196	.058	.238	3.396	.001	.635	1.575
	M_RR1	.272	.057	.403	4.759	.000	.435	2.301

a. Dependent Variable: M_HM1

Table 2: Coefficient Table

Result for hypothesis:

H1: There is a significant positive relationship between a new sense of security and hotel management post-pandemic.	Rejected
H2: There is a significant positive relationship between AI smart voice assistant and hotel management post-pandemic.	Rejected
H3: There is a significant positive relationship between a digital labour as first-line defence and hotel management post-pandemic.	Supported
H4: There is a significant positive relationship between rethinking reward systems and hotel management post-pandemic.	Supported

Conclusion and recommendations for future research

The study was guided by four hypotheses that were drawn from four specific research questions. Out of the four hypotheses, the first two of them were found to have insignificant effects on post-pandemic hotel management. H1 hypothesised that there is a significant positive relationship between a new sense of security and hotel management post-pandemic. H2 hypothesised that there is a significant positive relationship between AI smart voice assistant and hotel management post-pandemic. However, hypotheses three and four were found to have significant effect on hotel management past-pandemic. Digital labour as first-line defence and rethinking reward system had the most impact on hotel management past-pandemic.

There should be additional research studies to get larger samples from various marketplaces that are representative of diverse customer categories globally. It is advised that the population be expanded to include all demographic cohorts. This would aid scholars looking at racial and societal diversity. Therefore, the study can be seen in greater detail, and it becomes a reliable source for both researchers and marketers in the hotel management post-COVID-19. A longitudinal study design is also recommended to determine the changes in the hotel industry over time. This will allow investigators to determine the effect various variables in the context of hotel management post-pandemic.

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