Impact of COVID-19 Pandemic on Generation Z Employees’ Perception and Behavioral Intention toward Advanced Information Technologies in Hotels

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Abstract: This study explores Generation Z hotel employees’ perception of and behavioral intention to use advanced information technologies (ITs) before and during COVID-19. The relationship between perception and intention moderated by COVID-19 is investigated. The technology acceptance model (TAM) and innovation diffusion theory (IDT) are integrated, and compatibility is added as an additional construct to conduct this longitudinal study. Data were collected in Hong Kong in April 2019 (pre-pandemic stage) and March 2021 (pandemic stage). Regression analysis, t-test, Cochran’s Q test, and correspondence analysis are applied. Follow-up in-person interviews are conducted to validate the results. The results reveal significant differences between the pre-pandemic and pandemic stages and the moderating effect of COVID-19 on the relationship between the perception of and behavioral intention to use advanced ITs. This study addresses the gap in hospitality research by integrating TAM and IDT to examine Generation Z hotel employees’ behavioral intention to use advanced ITs.

Keywords: technology acceptance model; innovation diffusion theory; advanced information technology; Generation Z; hotel employee

1. Introduction

The rapid development of advanced information technologies (ITs), such as service automation, artificial intelligence (AI), and robotics, has strongly influenced the hotel industry. Existing studies showed that the adoption of advanced ITs by hotels could generate operational benefits, such as reducing labor costs and improving employee efficiency by saving time and enhancing customer experience [1–3]. Given the quarantine restrictions and health concerns, the outbreak of COVID-19 in 2020 accelerated technology innovation and industry transformation. Digital and contactless services supported by advanced ITs replaced close service contact in the hotel industry [4]. As a major solution to the COVID-19 crisis, advanced ITs are likely to play an important role in the recovery of the hotel industry. Numerous studies explored the influence of using AI and robotics on organizations’ operations, which can help them succeed, as guests value hygiene and cleanliness when deciding to visit and stay in hotels [5]. At the same time, barriers to the adoption of advanced ITs also exist, such as resistance to change, information security risks, and lack of a skilled workforce [6]. Researchers and practitioners identified several drawbacks of using ITs, which deserve attention from hoteliers [7].

The successful implementation of new technologies requires skilled and committed management and employees. Whether hotel employees are willing or want to use the latest advanced ITs is a key consideration [8]. Generation Z, which comprises individuals
born between 1995 and 2001, is regarded as the “technological generation” and the next generation of hospitality talents [9–11]. Sun et al. [8] emphasized that hotel employees from different cultural backgrounds exhibit differences in the use and acceptance of technology. Past research focused mainly on Generation X and Y employees who are comfortable using new technologies in the workplace and attracted to communication and ITs for sending messages to communicate with colleagues [12]. The impact of the COVID-19 pandemic on Generation Z members’ working intention mediated by human values in Thailand was addressed and examined, and a series of suggestions for retaining these employees in the hotel industry was provided [13]. Generation Z hotel employees’ perception of and behavioral intention to use advanced ITs remain unclear, especially when the impact of the pandemic is considered. This study aims to fill this research gap by examining how Generation Z employees perceive advanced ITs utilized in hotel operations and respond to technology adoption, considering the current COVID-19 pandemic.

Among several theoretical models examining the relationship between perception of technologies and behavioral intention, the technology acceptance model (TAM) is the most widely used in investigating the relationship between hospitality customers’ technology perception and behavioral intentions [14,15]. The TAM is powerful for understanding the relationship between consumers’ subjective attitudes and adoption behavior towards new technology. However, the TAM ignores the characteristics of new technologies, which can be supplemented through the integration of innovation diffusion theory (IDT) [16]. In hospitality and tourism research, IDT is commonly employed to assess consumers’ purchase or repurchase intentions [17]. However, studies have yet to empirically combine the TAM and IDT to explore hotel employees’ perception of advanced ITs. This study addresses this gap by integrating the TAM and IDT to examine the determinants of Generation Z hotel employees’ behavioral intention to use advanced ITs.

This study has three objectives. The first is to compare changes in Generation Z hotel employees’ perception of advanced ITs and behavioral intention to work in the hotel industry before and during the COVID-19 pandemic. The second is to explore the moderating effect of the COVID-19 pandemic on the relationship between Generation Z hotel employees’ perception of and behavioral intention to use advanced ITs adopted by hotels. The third is to examine Generation Z hotel employees’ perception of the drawbacks of advanced ITs.

The main contribution of this study is threefold. First, this study is the first to empirically explore hotel employees’ perception of advanced ITs and behavioral intention by integrating the TAM and IDT, which is a credible and effective theoretical model for understanding technology adoption behavior from the perspective of employees. At the same time, this study contributes to the understanding of how Generation Z hotel employees perceive the latest advanced ITs adopted by hotels and their work intention. Second, by comparing changes in the pre-pandemic and pandemic stages, this study contributes to our knowledge of the important attributes that will likely affect the new generation of employees’ perception of and intention to work in hotels, which can assist the hotel industry in making informed decisions and taking appropriate action. Lastly, this study aims to contribute to research on the impact of the COVID-19 pandemic and help the hotel industry attract and retain Generation Z talents.

2. Literature Review

2.1. TAM

The TAM is the most widely used theoretical model for explaining technology adoption behavior in the hospitality and tourism industry [15]. Based on the theory of reasoned action developed by Fishbein and Ajzen [18], the TAM suggests that when users are presented with new technology (e.g., AI and robotics), two specific perceptions, namely, perceived usefulness (PU) and perceived ease of use (PEOU), influence their technology adoption behavior [19]. This relationship was supported by numerous empirical studies in hospitality technology adoption research (for example, [14,20–24]).
Owing to its intended generality, the TAM can be supplemented easily by factors from relevant theories to capture specific technology and business contexts [14,25]. For example, Sahli and Legohérel [26] combined the TAM and theory of planned behavior (TPB) to examine consumers’ online travel booking behavior. Amaro and Duarte [27] integrated the TAM, TPB, and IDT to investigate the factors influencing consumers’ purchase intention toward online travel products. Other researchers indicated that the TAM and IDT are extremely similar in certain constructs and supplement each other.

Rogers [28] introduced IDT and noted that individuals react differently to innovation because of differences in their tendency to adopt an innovation. According to IDT, innovation adoption behavior has five important determinants, namely, relative advantage, compatibility, complexity, trialability, and observability. However, only relative advantage, compatibility, and complexity are related to technology adoption [29]. Previous studies found that in the TAM, the relative advantage is similar to PU, and the complexity is similar to PEOU [30]. Therefore, extending the TAM by including compatibility as an additional construct is reasonable. Wu and Wang [29] combined the TAM and IDT to investigate the determinants of mobile commerce users’ technology acceptance and found that compatibility has a direct effect on users’ behavioral intention to use mobile commerce. In hospitality and tourism research, IDT is commonly used to assess consumers’ purchase or repurchase intentions [17]. However, studies have yet to empirically combine the TAM and IDT to explore hotel employees’ perception of advanced ITs. To increase the credibility and effectiveness of this study, the TAM is supplemented by including compatibility as an additional research construct.

2.2. Advanced ITs in the Hotel Industry

Advanced ITs were defined as devices that support coordination and enable interaction in organizational activities through sophisticated information management [31,32]. They were relatively new or emerging IT innovations that promised to provide significant future value [33]. Advanced ITs employed in the hotel industry have become state-of-the-art tools for attaining competitive advantages [34,35]. Current examples include robots, AI, and service automation. Previous studies found that advanced ITs have financial benefits, such as reducing labor costs and improving employees' efficiency by saving time and enhancing service quality by improving guest services [1,2,36,37].

Due to health considerations during the COVID-19 pandemic, advanced ITs were further valued, developed, and employed in the hotel industry. Such ITs include mobile technologies, AI, facial recognition, big data, and others, which can enable professionals and hoteliers to learn about the disease and determine ways to maintain distance and offer services safely [5]. Specifically, AI is valued increasingly during the pandemic, as it can easily trace the virus, prevent infections, identify risks in real-time, reduce employees’ workloads, and monitor and trace confirmed cases [38]. Moreover, organizational efforts and commitment to health and hygiene and job security were proven to enhance employees’ perceptions [39]. Accordingly, the use of advanced ITs is considered a significant and effective way to retain employees while maintaining internal and external safety.

2.3. Generation Z Employees

Different definitions are used to describe Generation Z. According to Lanier [40], it is the generation born between the early ’90s and the mid-2000s. Berkup [9] defined it as the last generation whose members were born from 1995 onwards. As this study’s focus is on hotel employees, we define Generation Z members as individuals born between 1995 and 2001 or aged between 18 and 24 years and entering the workforce.

Generation Z members have work preferences similar to those of Generation Y members, that is, individuals born between 1980 and 1990 [9,41], who are more comfortable with using new technologies in the workplace and attracted to communication and ITs for sending messages and communicating with colleagues compared with Generation X members, i.e., individuals born between 1961 and 1980 [42,43]. Moreover, studies showed
that the high engagement of Generation Y members in hotels generates high-level output and low turnover rates [12]. Furthermore, Generation Y members seek communication and low hierarchical barriers [41].

2.4. Perception of Advanced ITs and Behavioral Intention

Perception of advanced information systems used in hotels can latently reflect the level of acceptance and use of such systems, either AI or information systems [44]. Lam et al. [44] found that a positive perception could lead to a high degree of intention to adopt IT. As proven by Hao et al. [45], digital and intelligent services have become increasingly necessary in supply and demand aspects. From the perspective of organizations, the application of digital and intelligent services is beneficial for diminishing human errors, reducing costs and risk of shortage, enhancing service efficiency and performance, improving satisfaction, and most important, maintaining cleanliness in contactless service.

Li et al. [46] claimed that hotel employees’ high perception of AI would likely have an adverse effect on their turnover intention. Accordingly, the use of advanced ITs is considered a significant and effective way to retain employees while promising to maintain internal and external safety. Generation Z members tend to work with social media, which affects their lifestyle and behavior from birth [47]. Moreover, Generation Z members prefer to obtain information from the Internet and share messages in Internet environments. Generation Z members look for creativity, multitasking, and efficient use of technology in the workplace, which are related to their ability to deal with technologies [9]. In addition, Generation Z members’ work intention is linked to human values such as universalism, benevolence, self-direction, achievement, and security.

Moreover, Generation Z hotel employees expressed diverse views on working environment variations, such as working from home and handling multiple functions owing to a shortage of labor. Such changes reflect their preparedness and IT learning for similar or different work duties and, consequently, their work commitment and intentions. For simplicity, the term “work intention” is used in this study to denote behavioral intention to accomplish work-related tasks. Based on the above literature review, we propose the following hypotheses:

**Hypothesis 1a (H1a).** A mean difference exists in Generation Z hotel employees’ perception of advanced ITs in the pre-pandemic and COVID-19 pandemic stages.

**Hypothesis 1b (H1b).** A mean difference exists in Generation Z hotel employees’ work intention in the pre-pandemic and COVID-19 pandemic stages.

**Hypothesis 2 (H2).** A positive relationship exists between Generation Z hotel employees’ perception of advanced ITs and work intention in the hotel industry.

**Hypothesis 3 (H3).** The effect of Generation Z hotel employees’ perception of advanced ITs on their work intention in the hotel industry is stronger in the COVID-19 pandemic stage than in the pre-pandemic stage.

2.5. Drawbacks of Advanced ITs

The use of ITs is known to significantly affect hotel management. Numerous studies have examined the benefits generated by ITs [10,48]. However, some studies identified associated disadvantages or drawbacks of adopting advanced ITs by hotels. For example, Hilton et al. [49] expressed concerns about the effectiveness of advanced ITs in improving hotel operation efficiency. Other researchers stated that ITs reduce service customization and thus affect service experience [50,51]. In Hong Kong, Chang and Tung [52] investigated the effects of robotic services in hotels with a 2 (human or robot) × 3 (hotel segment) experimental design and found that robot services create high aesthetics and spiritual experience but reduce the sentimental experience. In Greece, Menegaki [53] interviewed 20
managers from different hotels about the advantages and disadvantages of adopting new technologies and identified several drawbacks. To the best of our knowledge, studies have yet to investigate how Generation Z hotel employees perceive the drawbacks of advanced ITs. Thus, we propose the following research question:

What are Generation Z hotel employees’ perception of the drawbacks of advanced ITs in their department?

3. Methodology

3.1. Research Design and Sampling Approach

This study aimed to examine the relationship between Generation Z hotel employees’ perception of advanced ITs and work intention as well as the latent relationship in the context of the COVID-19 pandemic. The target population of this study was Generation Z hotel employees in Hong Kong. This study covered two stages: the pre-pandemic stage in April 2019, which was shortly before the outbreak of COVID-19, and the pandemic stage in March 2021. Convenience sampling was used to identify potential respondents quickly and efficiently and to send the questionnaire to the same groups of respondents again during the latter stage of the longitudinal study. According to the Hong Kong Census and Statistics Department [54], of the total population at the end of June 2019 and June 2020, the proportion of Generation Z was about 5%. Given that the hotel industry in Hong Kong generated around 220,000 directly related jobs [55], it could be roughly estimated that the population size of Generation Z hotel employees was about 11,000. The smallest acceptable sample size was 99, with a ±10% margin of error and a confidence level of 95% [56]. A mixed-methods approach was employed, in which a quantitative approach was used in the first part of the study to investigate Generation Z hotel employees’ perception of and behavioral intention to use advanced ITs in the pre-pandemic and pandemic stages, and a qualitative approach was used in the second part of the study to verify the findings from the first part through in-depth semi-structured interviews.

3.2. Measurement and Questionnaire Design

A self-administered questionnaire consisting of five parts was created based on previous research [44,57]. Two screening questions regarding working in a hotel and being part of Generation Z were asked in Part 1 of the questionnaire. Part 2 explored the respondents’ IT experiences (two questions) with close-ended questions. Part 3 measured the variables assessing the respondents’ perception of ITs, including PEOU, PU, and compatibility. The variables assessing intention were associated with behavioral intention, including the intention to work in a hotel with advanced ITs, the possibility of using advanced ITs, preference, and frequency of use of advanced ITs. The theoretical framework of this study is presented in Figure 1. The perception variables were related to PEOU (i.e., P1–P3), PU (i.e., P4–P6), and compatibility (i.e., P7). The behavioral intention variables were related to intention (i.e., WI1), possibility (i.e., WI2), preference (i.e., WI3), and frequency (i.e., WI4). Table 1 provides the details of the variables. All the perception and work intention variables were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Part 4 focused on the drawbacks of using ITs, and following Kumar [7], six items were included, such as unemployment, job culture (i.e., sincerity and hospitality), technological skills (i.e., ability to fix system errors), and output (i.e., efficiency and workload). The respondents were asked to choose at least three drawbacks. Part 5 collected the respondents’ demographic information, such as gender, nationality, and education level, with close-ended questions. A pilot test was conducted on six Generation Z students majoring in hospitality management with hotel work experience to test the viability of the questionnaire before the large-scale research.
Figure 1. Theoretical framework.

Table 1. Perception and work intention variables.

| Construct                      | Variables                                                                 | Code |
|--------------------------------|---------------------------------------------------------------------------|------|
| Perception towards advanced ITs| 1. Good for relationship and communication                                | P1   |
|                                | 2. Easy to handle without support                                         | P2   |
|                                | 3. Can reduce workload                                                    | P3   |
|                                | 4. Can deliver hospitality                                                | P4   |
|                                | 5. AI is more useful than human staff                                    | P5   |
|                                | 6. Front office uses AI technology more effectively than the back office  | P6   |
|                                | 7. Necessary to apply in all departments                                  | P7   |
| Behavioral Intention          | 1. I intend to work in hotels with advanced ITs                           | WI1  |
|                                | 2. I will use advanced ITs when working in a hotel                        | WI2  |
|                                | 3. I intend to work with service robots than humankind-colleague           | WI3  |
|                                | 4. It is likely that I use advanced ITs for my job frequently              | WI4  |

3.3. Data Collection Procedure and Analysis

Online surveys (on Google and WeChat) were used to recruit targets through social network groups (Facebook and WeChat) for hotel employees in Hong Kong. The same network groups were used for data collection in the two stages of this study. A total of 210 responses were obtained, 106 of which were collected in April 2019 before the COVID-19 pandemic, and 104 of which were collected in March 2021 during the pandemic stage. All the respondents belonged to Generation Z and had relevant work experience in the hotel sector. Data were analyzed using SPSS. Independent sample t-tests were employed to understand the effects of the COVID-19 outbreak on the perception of advanced ITs. In addition, regression analysis was conducted to test the causal relationships between the variables. Descriptive analysis, Cochran’s Q test, and correspondence analysis were performed to explore the drawbacks of ITs and the demographic profiles of the respondents.

3.4. Follow-Up Interviews

The second part of the study involved follow-up in-person interviews to validate the results of the first part of the study. Given this aim, there is no general standard for setting a particular sample size. According to Creswell and Poth [58], a range of three to five interviews per case can be suitable. Interview invitations were sent to several potential
interviewees from different hotel departments. Generation Z hotel employees different from those who participated in the pilot test and survey were recruited to review the impact of the COVID-19 pandemic using the quantitative results of this study. In the end, only four individuals accepted our invitation and participated, but no new information was obtained [59]. Table 2 shows the interviewees’ demographic information. They were mainly from the food and beverage sector. To prevent bias, the interviewers asked the respondents about the impact of the COVID-19 pandemic on their perception and work intention without telling them the results of the survey.

Table 2. Demographic information of interviewees.

| Interviewee | Gender | Age | Region       | Education  | Department          |
|-------------|--------|-----|--------------|------------|---------------------|
| R1          | Female | 21  | Hong Kong    | Undergraduate | F&B                |
| R2          | Female | 21  | Hong Kong    | Undergraduate | F&B                |
| R3          | Female | 21  | Overseas     | Undergraduate | F&B and FO administration |
| R4          | Female | 24  | Mainland China | Master    | NA                  |

4. Results

4.1. Demographic Characteristics

Table 3 describes the demographic characteristics of the Generation Z hotel employees in 2019, before the COVID-19 pandemic and in 2021, during the pandemic. Among the respondents in the pre-pandemic stage, 66% are female \( (n = 70) \), and 36% are male \( (n = 36) \). Most of the respondents have a bachelor’s degree \( (n = 81, 76.4\%) \), followed by those with a high school diploma or an associate’s degree \( (n = 19, 17.9\%) \). The number of respondents with a master’s degree is the same as that of respondents with a doctoral degree \( (n = 3, 2.8\%) \). A large percentage of the respondents is from Hong Kong \( (n = 53, 50\%) \), followed by mainland China \( (n = 45, 42.5\%) \) and overseas \( (n = 7, 6.6\%) \). Only one respondent is from Macau or Taiwan \( (0.9\%) \). About half of the respondents \( (48.1\%) \) use ITs during their work quite often (three days per week or more). In terms of hotel departments, 56.6% of the respondents \( (n = 60) \) work in the front office, 28.3% \( (n = 30) \) are in food and beverage, and 15.1% \( (n = 16) \) work in the back office.

Among the respondents in the pandemic stage, 87.5% are female \( (n = 91) \), and 12.5% are male \( (n = 13) \). Similarly, the majority of the respondents have a bachelor’s degree \( (n = 79, 76\%) \), followed by those with a master’s degree \( (n = 17, 16.3\%) \) and those with a high school diploma or an associate’s degree \( (n = 7, 6.7\%) \). Only one respondent has a doctoral degree. The respondents from Hong Kong \( (n = 52) \) account for exactly 50% of the total number of respondents, followed by the respondents from Mainland China \( (n = 42, 40.4\%) \). Few respondents are from Macau \( (n = 3, 2.9\%) \) and overseas countries \( (n = 7, 6.7\%) \). Most of the respondents \( (66.3\%) \) use ITs during their work quite often (3-day per week or more). In terms of hotel departments, 52.9% of the respondents \( (n = 55) \) work in the front office, 25% \( (n = 26) \) are in food and beverage, and 22.1% \( (n = 23) \) work in the back office.

4.2. Mean Comparison of Perception of Advanced ITs and Work Intention by COVID-19 Stage

Table 4 shows mean differences in the Generation Z employees’ perception of advanced ITs and work intention between the pre-pandemic and pandemic stages. Generally, the COVID-19 pandemic had a significant effect on perception and work intention and the results. The Generation Z hotel employees exhibited high perception and work intention during the pandemic compared with before the pandemic.
Table 3. Demographic characteristics of respondents.

| Characteristics | Before Pandemic | During Pandemic |
|-----------------|-----------------|-----------------|
|                 | n   | %   | n   | %   |
| **Gender:**     |     |     |     |     |
| Female          | 70  | 66  | 91  | 87.5 |
| Male            | 36  | 34  | 13  | 12.5 |
| **Education:**  |     |     |     |     |
| HD/AD           | 19  | 17.9| 7   | 6.7  |
| Bachelor        | 81  | 76.4| 79  | 76.0 |
| Master          | 3   | 2.8 | 17  | 16.3 |
| PhD             | 3   | 2.8 | 1   | 1.0  |
| **Region:**     |     |     |     |     |
| Hong Kong       | 53  | 50  | 52  | 50.0 |
| Mainland        | 45  | 42.5| 42  | 40.4 |
| Macau/Taiwan    | 1   | 0.9 | 3   | 2.9  |
| Overseas        | 7   | 6.6 | 7   | 6.7  |
| **Frequency of using ITs:** |     |     |     |     |
| 1- to 2-day per week | 25  | 23.6| 18  | 17.3 |
| 3- to 5-day per week | 25  | 23.6| 26  | 25.0 |
| Every day       | 26  | 24.5| 43  | 41.3 |
| Others          | 30  | 28.3| 17  | 16.3 |
| **Department:** |     |     |     |     |
| Front Office    | 60  | 56.6| 55  | 52.9 |
| Back Office     | 16  | 15.1| 23  | 22.1 |
| Food and Beverage | 30  | 28.3| 26  | 25.0 |

During the pandemic, Generation Z employees (84.6%) are highly inclined to believe that the use of advanced ITs is good for relationships and communication (P1; t-value = −2.97, p < 0.01). The variable regarding reduced workloads through the use of advanced ITs (P3) after the pandemic outbreak is perceived by the Generation Z employees (79.8%) as positive (t-value = −2.56, p < 0.05). The variable regarding the need to employ ITs in all hotel departments (P7) is also perceived by the Generation Z employees (80.8%) as positive (t-value = −2.34, p < 0.05).

As for work intention, Generation Z employees have a positive intention to work in a hotel utilizing advanced ITs (WI1; t-value = −4.29, p < 0.01) and show a high intention to use ITs when working in a hotel (WI2; t-value = −4.11, p < 0.01) during the COVID-19 pandemic. Moreover, Generation Z employees are likely to frequently use advanced ITs in the workplace (WI4; t-value = −3.81, p < 0.01) during the COVID-19 pandemic. Thus, H1a and H1b are partially supported.

4.3. Relationship between Perception and Work Intention

Table 5 reports the results of the multiple regression analysis, with work intention as the dependent variable. The direct impact and interaction effect of perception of ITs and the COVID-19 pandemic are treated as the independent variables, and the combined item of work intention is the dependent variable. The adjusted $R^2$ value = 0.576, and the F-value = 19.942 (p = 0.000). Five of the seven perceptions (i.e., P1, P3, P5, P6, and P7) and the COVID-19 pandemic are found to influence the Generation Z hotel employees’ work intention. Specifically, P5 (AI is more useful than human staff) has the most positive effect on work intention ($\beta = 0.196$, t-value = 4.367, p < 0.001), followed by P1 (good for relationships and communication; $\beta = 0.162$, t-value = 3.374, p < 0.001). Similar significant results are found for P5, P7, and P3 at p < 0.01 and p < 0.05. The COVID-19 pandemic factor
also positively influences the Generation Z hotel employees’ work intention ($\beta = 0.100, t$-value = 2.745, $p < 0.01$). However, P2 and P4 do not have an impact on work intention. As a result, H2 is only partially supported.

### Table 4. Mean comparisons on perceptions of ITs and work intention during COVID-19 periods.

| Variables                                      | Before Pandemic (1) | During Pandemic (2) | $t$-Value | $p$  | Comparison |
|------------------------------------------------|---------------------|---------------------|------------|------|------------|
| **Perception**                                  |                     |                     |            |      |            |
| 1. Good for relationship and communication     | 3.83 0.99           | 4.22 0.91           | −2.97      | 0.003** | (2) > (1) |
| 2. Easy to handle without support             | 3.34 1.14           | 3.44 1.13           | −0.66      | 0.51  |            |
| 3. Can reduce workload                         | 3.82 0.98           | 4.15 0.90           | −2.56      | 0.011* | (2) > (1) |
| 4. Can deliver hospitality                    | 3.48 1.14           | 3.72 1.10           | −1.55      | 0.12  |            |
| 5. AI is more useful than human staff          | 3.25 1.14           | 3.23 1.19           | 0.09       | 0.93  |            |
| 6. Front office uses AI technology more effectively than the back office | 3.37 1.13 | 3.64 1.09 | −1.80 | 0.07  |            |
| 7. Necessary to apply in all departments       | 3.84 1.02           | 4.15 0.92           | −2.34      | 0.021* | (2) > (1) |
| **Work Intention**                              |                     |                     |            |      |            |
| 1. I intend to work in hotels with advanced ITs | 3.53 0.95           | 4.07 0.87           | −4.29      | 0.000*** | (2) > (1) |
| 2. I will use advanced ITs when working in a hotel | 3.76 0.85   | 4.22 0.76           | −4.11      | 0.000*** | (2) > (1) |
| 3. I intend to work with service robots than humankind-colleague | 2.80 1.14 | 2.94 1.26 | −0.90 | 0.37  |            |
| 4. It is likely that I use advanced ITs for my job frequently | 3.53 0.95 | 3.93 0.90 | −3.18 | 0.002** | (2) > (1) |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In terms of the moderating effect results, among the seven items of perception of ITs, only one item (P3; advanced AIs can reduce workloads) shows a positive interaction effect with the COVID-19 pandemic ($\beta = 0.124, t$-value = 2.768, $p < 0.001$). Thus, H3 is only partially supported.

### 4.4. Drawbacks of Using Advanced ITs

Table 6 presents the respondents’ responses to the drawbacks of using advanced ITs in hotels before and during the COVID-19 pandemic. Before the COVID-19 pandemic, the most serious drawback of using advanced ITs, as perceived by Generation Z employees, was the lack of interaction between customers and hotel staff ($n = 62, 58.5\%$), followed by difficulties in fixing system problems without IT support ($n = 59, 55.7\%$). The third most serious drawback is a lack of sincerity and hospitality ($n = 58, 54.7\%$), whose percentage is similar to that of the second drawback. The least serious disadvantage is creating more trouble and reducing efficiency in solving errors ($n = 45, 42.5\%$). Concern about unemployment accounts for approximately 46.2\% ($n = 49$), and perceived difficulties communicating with AI constitutes 47.2\% ($n = 50$) of the total responses. Cochran’s Q test is conducted to determine the existence of statistical heterogeneity between three or more response variables [60]. However, Cochran’s Q test results ($p = 0.114$) show no significant heterogeneity between the six drawbacks identified by the respondents.
Table 5. Regression results with work intention as the dependent variable.

| Variable | Unstandardized Coefficients | t-Value | p  |
|----------|-------------------------------|---------|----|
| (Constant) | 3.585                        | 98.239  | 0.000 *** |
| Perceptions |                              |         |    |
| P1: Good for relationship and communication | 0.162 | 3.374  | 0.001 *** |
| P2: Easy to handle without support | 0.032 | 0.733  | 0.465 |
| P3: Can reduce workload | 0.092 | 2.059  | 0.041 * |
| P4: Can deliver hospitality | 0.084 | 1.752  | 0.081 |
| P5: AI is more useful than human staff | 0.196 | 4.367  | 0.000 *** |
| P6: Front office uses AI technology more effectively than the back office | 0.127 | 2.663  | 0.008 ** |
| P7: Necessary to apply in all departments | 0.124 | 2.849  | 0.005 ** |
| COVID-19 | 0.100                        | 2.745   | 0.007 ** |
| Interaction effect |                      |         |    |
| COVID-19*P1 | 0.019                       | 0.386   | 0.700 |
| COVID-19*P2 | 0.004                       | 0.092   | 0.927 |
| COVID-19*P3 | 0.124                       | 2.768   | 0.006 ** |
| COVID-19*P4 | −0.049                      | −1.026  | 0.306 |
| COVID-19*P5 | −0.001                      | −0.024  | 0.980 |
| COVID-19*P6 | −0.031                      | −0.656  | 0.513 |
| COVID-19*P7 | −0.038                      | −0.870  | 0.385 |

*p < 0.05, **p < 0.01, ***p < 0.001. Adjusted R² = 0.576, F = 19.942, significance F = 0.000 **.

Table 6. Perceived drawbacks of Generation Z hotel employees by different stages.

| Drawback | Before Pandemic (N = 106) | During Pandemic (N = 104) |
|----------|---------------------------|---------------------------|
|          | n  | % of Cases | n  | % of Cases |
| 1. Unemployment | 49 | 46.2       | 59 | 56.7 |
| 2. Lack sincerity and hospitality | 58 | 54.7       | 66 | 63.5 |
| 3. Lack interaction | 62 | 58.5       | 56 | 53.8 |
| 4. Hard to communicate with AI robots | 50 | 47.2       | 29 | 27.9 |
| 5. Hard to fix the system without support | 59 | 55.7       | 69 | 66.3 |
| 6. More troublesome and less efficiency | 45 | 42.5       | 46 | 44.2 |
| Total | 323 |              | 325 |          |

By contrast, during the COVID-19 pandemic, statistical heterogeneity is observed between the six drawbacks identified by the respondents, according to Cochran’s Q test results (p = 0.000). The Generation Z respondents believe that difficulties fixing system problems without IT support is the most crucial problem (n = 69, 66.3%), followed by lack of sincerity and hospitality (n = 66, 63.5%). The disadvantage of causing unemployment accounts for 56.7% (n = 59) of the total responses, which is higher than the percentage in 2019, before the pandemic. The least perceived disadvantage is difficulty communicating with AI (n = 29, 27.9%), which drops considerably during the pandemic. The most serious drawback perceived before the COVID-19 pandemic was the lack of interaction between customers and hotel staff, which accounts for only 53.8% (n = 56) during the pandemic.

Table 7 shows the responses of the respondents from different departments (front office, back office, and food and beverage) to the drawbacks of using advanced ITs in hotels.
Correspondence analysis symmetrical normalization (see Figure 2) is used to create a biplot, which can effectively show the associations between the two categorical variables, that is, departments and drawbacks. Variable categories with similar profiles are closed on the biplot. According to Figure 2, dimensions 1 and 2 explain approximately 85.7% and 14.3% of the variance in the data, respectively. The biplot reveals that the respondents from the front office are concerned most about the drawback of lack of sincerity and hospitality, those from the back office worry most about difficulties in fixing system problems without IT support, and those from food and beverage (F&B) identify unemployment as the biggest drawback of advanced IT adoption.

Table 7. Perceived drawbacks of Generation Z hotel employees by departments.

| Drawback                                      | Front Office (N = 115) | Back Office (N = 39) | Food and Beverage (N = 56) |
|----------------------------------------------|------------------------|----------------------|-----------------------------|
|                                              | n  | % of Cases  | n  | % of Cases  | n  | % of Cases  |
| 1. Unemployment                              | 52 | 45.2       | 19 | 48.7        | 37 | 66.1        |
| 2. Lack sincerity and hospitality            | 68 | 59.1       | 23 | 59          | 33 | 58.9        |
| 3. Lack interaction                          | 61 | 53         | 22 | 56.4        | 35 | 62.5        |
| 4. Hard to communicate with AI robots        | 42 | 36.5       | 14 | 35.9        | 23 | 41.1        |
| 5. Hard to fix the system without support    | 67 | 58.3       | 25 | 64.1        | 36 | 64.3        |
| 6. More troublesome and less efficiency      | 52 | 45.2       | 15 | 35.8        | 24 | 42.9        |
| Total                                       | 342|            | 118|             | 188|             |

Figure 2. Correspondence analysis of drawbacks and departments. D1: Unemployment; D2: Lack of sincerity and hospitality; D3: Lack of interaction; D4: Hard to communicate with AI robots; D5: Hard to fix the system without support; D6: More troublesome and less efficiency.
4.5. Interview Results

All the interviewees mentioned that the COVID-19 pandemic exerts an important effect on their perception of advanced ITs because hotels “introduce more IT stuff” and “invest in more technology” as well as “reduce contact and keep [people] safe”. One interviewee (R4) said, “Young people are more receptive to high technology”. The interviewees believe that advanced ITs allow “working from home instead of face-to-face communication” (R2) and are “better for tourists from different countries” (R4). Three of the four interviewees feel that using advanced ITs can reduce workloads during the COVID-19 pandemic. However, two of the four interviewees believe that “it is not necessary” to employ advanced ITs in all hotel departments because advanced ITs “would replace manpower” (R1) and “will cause more errors and affect pace” (R3).

In terms of work intention, all the interviewees mentioned that trying different technologies would be interesting, and they could learn something new. The interviewees also expressed that advanced ITs can “make work easier” (R2) but “require higher ability” (R4), are “no fun” (R1), and are “complicated” (R4).

5. Discussion and Conclusions

This study aims to understand the moderating effect of the COVID-19 pandemic on the relationship between Generation Z employees’ perception of emerging ITs and work intention as well as the perceived drawbacks of advanced ITs from the perspective of the Generation Z hotel employees. The results support the proposed hypotheses and research model. The comparison results reveal significant mean differences in Generation Z hotel employees’ perception of advanced ITs and work intention between the pre-pandemic and pandemic stages. Specifically, during the COVID-19 pandemic, perception of advanced ITs regarding PEOU (that is, using advanced ITs is good for relationships and communication and advanced ITs reduce workloads) and compatibility (that is, it is necessary to apply advanced ITs in all hotel departments) is significantly higher than that before the COVID-19 pandemic. The results are similar to those reported by [61–63]. As for work intention, the Generation Z employees expressed positive intention to work in a hotel with advanced ITs and a high intention to use advanced ITs during the pandemic stage. According to Jiang and Wen [5] and Kaushal and Srivastava [64], AI was highly appreciated after the outbreak of COVID-19. Thus, Generation Z employees are likely to use advanced ITs frequently in the workplace during the COVID-19 pandemic. These results are verified by the follow-up interviews.

A positive relationship exists between the Generation Z hotel employees’ perception of advanced ITs and work intention, which is strengthened by the COVID-19 pandemic. The results show that when Generation Z employees highly value PEOU (that is, using advanced ITs is good for relationships and communication and advanced ITs reduce workloads), PU (that is, AI is more useful than human staff and the front office uses AI more effectively than the back office), and compatibility (that is, it is necessary to employ advanced ITs in all hotel departments), they will demonstrate high intention to work in a hotel with advanced ITs and use advanced ITs frequently in the workplace, which is further verified by the results of the follow-up interviews. The COVID-19 pandemic is found to have a moderating effect on the relationship between perception and intention. Specifically, if the Generation Z employees’ perception of advanced ITs regarding PEOU (that is, advanced ITs reduce workloads) increases, then they will have a higher intention to work in hotels in situations similar to the COVID-19 crisis. Considering the result of the interaction effect of the item of advanced ITs reduce workloads and the COVID-19 pandemic, we can observe that the pandemic drives Generation Z employees to care about the effectiveness of advanced ITs in reducing workloads and helping maintain hygiene, cleanliness, and contactless service. This change is similar to that observed by Jiang and Wen [5], Shin and Kang [4], and Stergiou and Farmaki [65].

As for the drawbacks perceived by the Generation Z hotel employees, the top concern before the COVID-19 pandemic—lack of interaction between customers and the hotel
staff—became the fourth drawback during the COVID-19 pandemic. One possible reason for this outcome is that people must maintain a safe distance from one another during the pandemic, and reducing interactions between hotel staff and customers is reasonable and safe, which in return can make guests feel safer [5]. Moreover, during the COVID-19 pandemic, difficulty in fixing system problems without IT support is the most crucial drawback perceived by Generation Z employees, especially those in the back office of a hotel. The second drawback identified is a lack of sincerity and hospitality, especially by the employees in the front office of a hotel. Unemployment is also a serious concern among the respondents, especially those in the food and beverage department, owing to the threat of advanced ITs and layoffs. These findings are supported by the interview results. With hotels using technologies considerably to prevent infections during the COVID-19 pandemic, employees must certainly deal with and rely increasingly on ITs, as technologies can perform tasks efficiently compared with human staff [5,66]. During the pandemic, Generation Z hotel employees raised concerns about their sense of importance, achievement, and job engagement [13,67]. Most important, low engagement and achievement may result in a low intention to work [67].

5.1. Theoretical Implications

This study offers two major theoretical contributions by filling the gap in the current literature and extending existing research on hotel technologies from the perspective of Generation Z employees and the impact of the COVID-19 pandemic. First, this study extends the TAM by integrating it with IDT models to explore the relationship between hotel employees’ perception of advanced ITs and work intention. The results show that a relationship exists, especially between the items of “using advanced ITs is good for relationships and communication”, “AI is more useful than human staff”, “AI technology is more effective at the front office than at the back office”, and “it is necessary to employ advanced ITs in all hotel departments” and the work intention of employees. These aspects relate to job tasks in which employees work closely with their colleagues in different departments, thereby relying on the synergy and reliability of the information. Meanwhile, hotel employees require advanced ITs to deliver prompt service to hotel guests. Ultimately, hotel employees’ perception of advanced ITs will promote their work intention.

Second, this study empirically explores Generation Z hotel employees’ perception of advanced ITs and behavioral intention to work in hotels by including the impact of the COVID-19 pandemic. Currently, limited research is available to understand how Generation Z members, who are the new generation of talents, will be affected by the adoption of advanced ITs and perceive and respond to the latest technologies in hotels. To the best of our knowledge, this study is the first to investigate the influence of the COVID-19 pandemic on Generation Z hotel employees’ perception of advanced ITs and behavioral intention as well as the relationship between perception and intention. Generation Z hotel employees are willing to accept and acknowledge the benefits of advanced ITs; thus, their behavioral intention to accomplish work-related tasks increases. Under the effect of the COVID-19 pandemic, absenteeism rates rise, and hotel employees tend to resign from their job for the sake of their health and that of their families [65]. For instance, the hotel industry in Hong Kong is confronted by a serious labor shortage. Thus, understanding how to attract and retain a pool of new talents, that is, Generation Z members, is important. This study uncovers significant differences in Generation Z hotel employees’ perception of advanced ITs and behavioral intention between the pre-pandemic and pandemic stages. The moderating effect of the COVID-19 pandemic on the relationship between perception and intention is also supported. In the external environment of the COVID-19 pandemic, the importance of ITs is obvious in many ways, especially in reducing workloads. Employees will have time flexibility to work effectively and substantial opportunities to interact with hotel guests. The results of this study can provide valuable insights into the impact of the COVID-19 pandemic on the new generation’s behavior related to advanced IT adoption.
In addition, this study fills the research gap in investigating how Generation Z hotel employees perceive the drawbacks of advanced IT adoption.

5.2. Managerial Implications

This study provides the hotel industry with practical contributions. First, hoteliers should use increased innovative technologies, such as humanlike AI robots, as Generation Z employees believe that they can enhance communication between guests and the human staff and reduce workloads. Humanlike robots can express intimacy and provide gimmicks. Kim et al. [62] compared human and robotic services and showed that guests prefer robotic services over human ones, as robotic services attract not only guests but also future employees [45,68]. AI is being used considerably in hotels [66]. Mainland China attaches substantial importance to technologies employed in hotels. FlyZoo Hotel, which is fully equipped with advanced ITs, is considered successful in reducing risks and enhancing the guest experience [4]. The typical advantages of AI are clear and salient to reducing costs, accelerating the speed of operations, and enhancing accuracy and consistency [46]. Numerous studies discussed how to apply AI and digital services to hotel operations, from operational departments to customer service, based on a proposed business model [42,45,61,69]. If more humanlike robots can be placed in essential frontline positions and smart digital systems be installed in back offices, then increasing numbers of Generation Z members may work in hotels in the future. The COVID-19 pandemic may continue with the emergence of new virus variants; thus, developing employees with IT skills and knowledge would be a competitive strategic plan for medium- and long-term business sustainability.

Second, hoteliers should balance the use of technology and the workforce and consider the drawbacks of using ITs. According to Vatan and Doğan [70], service robots can provide considerable benefits; however, they may cause errors and problems when communicating with customers. Despite the capability of technologies to smoothen processes, human effort cannot be replaced, especially human contact, emotions, and communication. Therefore, hotel managers should consider allocating a limited number of AI applications to the most demanding departments to balance the duties of the human staff and technologies to maintain the core meaning of “hospitality” and safety service. The technology department requires a substantial workforce to provide adequate support for system issues and advance technologies continuously.

Finally, hoteliers should observe psychological changes in current and future employees when expanding the application of advanced ITs, especially AI, as high awareness of AI may lead to high turnover intention [66]. Hotel employees in different departments (front office, food and beverage, and back office) and with different functions can have varying perceptions of and concerns about IT implementation. The current literature discovered the impact of the pandemic on people’s mental health, which drives employees to leave the hotel industry [71,72]. Moreover, people are highly aware of safety and hygiene in the workplace, especially employees in hotels facing a high level of risks and those facing the threat of unemployment. Hoteliers should be conscious about future employees’ attitudes and psychological changes following the COVID-19 outbreak [45]. Generation Z members may experience job insecurity, intense competition with AI, and unstable work, which may lead to occupational stressors after the pandemic [72]. Thus, building a cooperative relationship to enhance Generation Z members’ interest in working in the hotel industry is important. For “department exposure”, Hotel ICON in Hong Kong offers a technical program called “IT Exposure” to Generation Z employees before officially starting their job and while employed to increase their abilities and confidence to handle ITs, thereby enabling them to form a positive perception.

5.3. Conclusions and Limitations

In this study, a theoretical research model is developed to analyze the perception of advanced ITs and behavioral intention and the moderating effect of the COVID-19 pandemic. The comparison results reveal significant mean differences in the Generation
Z hotel employees’ perception and behavioral intention between the pre-pandemic and pandemic stages. The regression analysis proves that Generation Z employees show increased positive behavioral intention, as they perceive advanced ITs positively in the pre-pandemic and pandemic stages. In addition, the Generation Z respondents identify several drawbacks of advanced ITs that may affect their work intention.

This study has limitations that should be acknowledged. First, the questionnaires were sent to the same social groups on WeChat for the online survey. Second, the hotel employees participated voluntarily in the surveys, which may create selection bias. Third, different advanced ITs affect different job sectors. Due to the focus of this study and the small sample size, this study did not compare sample groups from different departments. Fourth, the interviewees were mainly from the food and beverage department and thus may not be familiar with the advanced ITs adopted by other departments.

Further studies are recommended in the post-pandemic stage to obtain additional results on the impact of the COVID-19 crisis. This study reveals the moderating effect of the COVID-19 pandemic. However, there is no guarantee that such an effect will continue. The adoption of advanced ITs by different hotels and perception of advanced ITs by employees with different cultural backgrounds and job sectors may vary. Future research could compare differences across hotel segments or departments and cultural backgrounds. In addition, the oldest members of Generation Z (those approximately aged 25 at the time of this study) are usually the most entry-level employees. Given the nature of the work intention of the research subjects, future studies should try to control or exclude the possible impact of other factors (such as vaccination injection, salary, whether or not to obtain income during the epidemic) on their work intention. Finally, a longitudinal study can be considered to compare changes in perceptions as the COVID-19 pandemic continues.

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