The implementation of smart technologies in luxury hotels: Evidence from South Korea

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Abstract

Numerous of hospitality enterprises around the world either have already adopted or they start to adopt smart technologies in most departments of their functioning. However, the extent Smart Technologies application in hospitality industry generates new questions and hesitations concerning matters of sustainability, alienation and employability. South Korea, a country with a gradually noticeable growth in tourist flows until 2019, was chosen for the conduct of the present research. Unfortunately, the outbreak of coronavirus pandemic resulted in a deep drop of arrivals. The objective of the research is to identify the diffusion extent of smart technologies in different departments of Luxury and Upper Upscale hotels in South Korea and to depict in which ways smart technologies have contributed to the efficiency and sustainability of the particular type of hospitality enterprises. Semistructured interviews with open-ended questions were conducted for the collection of data. The responses revealed that smart technologies in Luxury hotels of South Korea are "conditio sine qua non" for the operation of all the departments. Interviewees supported that smart technologies enrich guests' experiences and increase guests' satisfaction by offering to them alternative opportunities for in-room entertainment and recreation. Luxury and Upper Upscale Hotels always pursue to keep up with advancements in Smart Technologies with the aim to prevail in their guests preferences. However, the estimations about the influence of Smart technologies in guests' intention for revisiting are controversial. The personnel of Luxury hotels are favorable to smart technologies, especially the new-hired employees. Luxury Hotels are seeking the investment in Smart Technologies which contribute to the efficient monitoring of energy and water consumption. Smart technologies have a valuable role in Customer Relation Management even if their impact in tourist inflows recovery remains blurry. Executive managers believe that Smart technologies can offer a wide range of possibilities for sustainable development in the hospitality industry of South Korea.

Keywords: Smart technologies, South Korea, luxury hotels, sustainability

1. Introduction

Ambient Intelligence has rapidly converted the landscape of the tourism industry by introducing innovative and alternative ways of hospitality management and customers' services. Rehse et al. (2020) argued that the components of contemporary technologies facilitate the hospitality enterprises to be more a) predictive, which means, capable to predict their customers' needs, b) preventive since new technologies advocate businesses to minimize occurrences of errors and c) proactive which means they will manage in a satisfactory degree to enrich the hospitality experiences beyond their guests' expectations. Furthermore, digital technologies enable customers

to have an active role regarding the formulation and the components of their accommodation experiences. As a consequence, many hospitality enterprises around the world either have already adopted or they start to take advantage of smart technologies in most departments of their functioning since the features of Smart technologies, namely flexibility, instant correspondence and adjustment through networks and interconnections among related devices, combined with cost- efficiency, offer a competitive advantage towards the conventional hospitality enterprises (Jaremen et al., 2016).

On the other hand, the extensive application of Smart Technologies in the hospitality industry generates new questions and anxieties concerning issues of privacy and data leaks, the inflexible recovery of automatic system failures as well as the influence in the rates of unemployment, since it is estimated that 25% of the hospitality workforce will be replaced by smart devices and humanoid robots until 2030 (Millauer and Vellekoop, 2019; Tussyadiah, 2020; Khaliq et al, 2022). They have been expressed arguments that the excessive use of smart technologies services instead of personnel in hospitality sector, not only confines human contact and communication and intensifies social isolation but also elicits indifference towards the welfare of societies and cultures of travelers' destinations (Tussyadiah, 2020; Khaliq et al. 2022). Li et al, 2021).

The paper is divided in six parts: The first part presents a brief review of previous studies about the relation of electronic engineering and information technology with hospitality. The second part refers to the social and community context of the study, that is to say, the hospitality business in South Korea, the objective of the study and the research issue. The third part describes the sample of the research as well as the methodological framework. The forth part displays the findings of the research and the fifth part contains a discussion upon those findings. Finally, the sixth part indicates limitations and proposals for further research.

2. Literature Review

One of the most valuable feature from the implementation of Ambient Intelligence is that enables potential customers and guests to get served twenty-four hours per day with efficiency and punctuality (Citak et al, 5). For example, chat bots and interfaces, with the form of platforms, enhance immediate responses to customers' questions and foster prolific dialogue among hospitality partners so as to ensure positive results from customers' aspects. It was also revealed that customers appreciate the time- saving procedures which are endorsed by smart technologies, such as self- service check-in and check- out, an evidence which was also confirmed by Chang et al. (2022) when the question comes to the connection between time-saving acts and guest perceptions on experiential quality.

According to Pillai et al. (2021), the evolution and implementation of Smart technologies have created new orientations and challenges for the tourism enterprises. From the aspect of provided services, it enables less contact among front-line employees and guests, emphasizing in the crucial matter of hygiene, safety and social distance preservation, along with the fulfillment of personal requirements of each guest. It is a consensus that during the outbreak of Covid19 pandemic, smart technologies were proved to be a valuable mean for preserving high standards of health protection for guests and for hotels' staff as well, augmenting thus the sense of safety, especially in unmanned hotels (Chang et al, 2022; Li et al. 2021). For instance, visual guides or robots providing delivery services, guiding and consulting to customers or cleaning services and disinfection in hospitality premises, have contributed a lot to the confinement of covid19 spread in conjunction with the performance of high quality services (Li et al., 2021). From the perspective of safety in hospitality industry, except from touchless transactions, smart technologies have also improved food safety via smart food labels and sensors which scan for diseases and assess the freshness of edible products (Chang et al. 2022).

Moreover, the use of smart devices and tools allows the generation and collectiveness of data which provide useful information concerning food waste management and controlling energy consumption, whereas the increasing use of big data has led to the improvement of revenue management software providing thus hospitality entities with more accurate forecasting which results in more realistic and efficient pricing policies (Chang et al., 2022; Millauer and Vellekoop, 2019). The progresses in Artificial Intelligence and robotics have created new opportunities for hospitality suppliers to perform marketing strategies in a vast array of potential customers. Indeed, marketing departments of hotel chains are now equipped with more effective tools which enable them to predict and offer a variety of services, tailored to customers' different needs, goals and wishes, from pre-trip to post- trip stages (Tussyadiah, 2020).

Unmanned hotels have also begun to gain a foothold in customers' preferences, offering to them a combination of independence and personalized service through the utilization of Smart technologies. Guests of smart hotels can arrange the temperature of their rooms or bed mattresses and curtains opening by voice commands, can access information, can order, get served or interact with assistant robots and smart devices without seeking for assistance from direct service employees (Chang et al., 2022).

However, some guests' categories are not familiar with the computer and automation technologies and they do not feel confident enough to use them (Tussyadiah, 2020). For these guests, the introduction of smart technologies is a source of inconvenience which discourages them from choosing a smart hotel for their accommodation, especially in cases where customers' needs require a high level of empathy (Ayyildiz et al., 2022; Khaliq et al, 2022). It is also supported by relevant studies that even when guests are favorably disposed towards robotics and smart technologies in hospitality sector, they still prefer services delivered by the human staff (Ayyildiz et al., 2022; Choi et al, 2020). Though, those findings are in contradiction with the results of Belanche et al. (2020) study where it is claimed that customers' perceptions of affinity with human-liked service robots is increased and boosts the recommendation of these services in social media.

3. Context and research question

South Korea was selected to conduct this research because it is recognized as one of the world's leading nations in research and development with great progress in various divisions of technology, such as automation, industrial design and manufacturing, robotics, smart devices, semiconductor materials and so on. The industrial and technological achievements of South Korea are widely applied in the daily activities of the inhabitants who are accustomed to innovative applications and devices (Dayton, 2020).

In the field of tourism industry, South Korea had a noticeable growth in tourist flows with 17.5 million international arrivals in 2019 (Jones Lang LaSalle, 2021). Unfortunately, the outbreak of coronavirus pandemic resulted in a deep drop of arrivals (approximately 976,000 arrivals in 2021), especially from the target- market of China, which is the main source of tourists' inflows in South Korea (Fig.1).

Despite the low travelers' rate, it is expected that tourism industry in South Korea will recover in the near future since USD 1.4 billion had been invested in hotels in 2021. It was also noticed that Luxury and Upper Upscale hotels of South Korea are recovering much faster comparing with Midscale and Economy hotels (Jones Lang LaSalle, 2021). In particular, the Revenue for Available Room indicator for Luxury and Upper Upscale hotels showed a recovery rate close to 86% from January 2020 to December 2021, when the same indicator for Midscale and Economy hotels hovered at about 66% (CoStar, 2022).

Taking into account the aforementioned, the question that arises is the following:

3.1 How smart technologies have contributed to the efficiency and sustainability of Luxury and Upper Upscale hotels in South Korea?

The pursuit of this question is to identify the diffusion extent of smart technologies in different departments of Luxury and Upper Upscale hotels in South Korea and to depict the benefits and difficulties that those types of hospitality entities have to deal with concerning the application and effectiveness of smart technologies.



Figure 1: Number of inbound visitors to South Korea from 2000 to 2021 (Source: Statista Research Department, Feb. 2022)

4. Materials and methods

Qualitative research was preferred in the specific study since the goal of the researchers is not to confirm predetermined findings rather than to explore in- depth a phenomenon which is rapidly spread among the hospitality and tourism businesses and has caused controversial reactions.

Semi- structured interviews with open- ended questions were conducted for the collection of data. As for the sample, executives from Luxury and Upper upscale hotels participated in the research as interviewees. Researchers pledged to maintain confidentiality concerning the interviewees' identities and the brand names of hotel enterprises that are involved in the study.

4.1 Main questions of the interview

The following questions comprise the structure of the interviews. The questions are predetermined, yet the interviewers had the discretion a) to give further explanations to the participants for the content of each question, b) to express it in a different way in order to make it more comprehensive, c) to add clarifying questions whenever was necessary.

1st: What forms of Smart Technologies are encompassed in the various departments of the hotel?

(The purpose of this question is to identify in what extent Smart technologies are integrated in the general context of Luxury and Upper Upscale Hotels in South Korea).

2nd: To your mind, have Smart Technologies- applied at your hotel- created added value to your hospitality product? Please, justify your answer.

(By this question, researchers tried to explore if and how Smart Technologies in Luxury and Upper Upscale hotels enrich the attributes of hospitality services in ways that increase the perceived value).

3rd: How do you think that Smart technologies affect guests' satisfaction? Please, justify your answer.

(This question constitutes an attempt to disclose if Smart Technologies are a factor of vital or minor significance in guests' satisfaction).

4th: According to your knowledge, what is the impact of Smart technologies on guests' intention to revisit the hotel or to recommend it to potential customers?

(Repeated customers and word- of- mouth advertising by satisfied guests are significant clues of a successful hotel policy; thus, it is important to be specified how Smart technologies reinforce these clues).

5th: What's the perception of Smart technologies in front-office and back- office employees?

(Productive employment and decent work are considered as substantial goals for the establishment of sustainable enterprises. It is interesting to exact how these goals are supported by smart technologies in Luxury and Upper upscale hotels in South Korea).

6th: In what ways Smart Technologies have affected the relation of the hotel with the environment?

(The purpose of the particular question is to examine how Luxury and Upper upscale hotels in South Korea manage, through Smart technologies, to combine exquisite experiences with environmentally friendly practices).

7th: How Smart technologies will help hotel to overcome the negative effects of tourism inflows reduction in South Korea?

(Since tourism industry in South Korea was heavily affected by the epidemiological crisis of coronavirus, the role of smart technologies is necessary to be investigated as regards the revival of hospitality sector).

8th: How do you think that smart technologies will affect the hotel performance in the near future? Please, justify your answer.

(The aim of this question is to depict: a) how Luxury and Upper Upscale hotels in South Korea can take advantages from the potential of Smart technologies so as to improve their performances in the upcoming years, b) how they can detect and handle the risks that stem from the use of Smart technologies in the particular hotel entities).

5. Findings

According to the responses given, smart technologies in luxury hotels of South Korea are "condition sine qua non" for the operation of all the departments. The most common usage of smart technologies are the chat bots in call centers, the remote meeting platforms in banquet rooms, blue tooth speakers in rooms, QR codes for restaurant menus, the digital flipcharts, the POS systems, digital registration systems, Liquid Crystal Display (LCD) digital artworks in lobbies or corridors and so on. For the Sales and Marketing departments, the integration with messaging applications, such as KAKAOTALK, is one of the most popular keys for upselling techniques and product positioning. For the particular departments, smart technologies proved a vital tool during periods of no physical contact enhancing the visibility of hotels and increasing the reach of the marketing. Luxury hotels of South Korea have also adopted digital task assignment systems and software in order to upgrade the internal communication and the inspection procedures among different operational departments.

Respondents claimed that, since domestic tourists in South Korea as well as tourists from Japan and Malaysia are intimate with the use of smart technologies in general, smart technologies integration is considered as a prerequisite for achieving high standard in hospitality services. They supported that, in a tech driven country as South Korea, the impact of Smart Technologies in perceived value is crucial, especially for young- aged guests and business travelers. As they have stated, in regards with their customers' feedback, Smart technologies contribute to well- rounded encounters with less effort and time-spending from guests' side, which in turn, enrich guests' experiences and increase guests' satisfaction by offering to them alternative opportunities for entertainment and recreation (e.g. in-room virtual guiding visiting). A participant referred that "(...) guests' satisfaction from hotel services is attributed to smart technologies, even if guests are not aware of this".

Regarding the intention of revisiting a hotel or to empower word of mouth advertising (lately it is referred as "word of mouse", stating that tech and social media have replaced the human contact), received answers were not exactly in the same direction. Luxury and Upper Upscale Hotels always pursue to keep up with advancements in Smart Technologies with the aim to prevail in their guests preferences and ensure their guests' revisiting. Some participants supported that Smart technologies constitute a competitive advantage in the luxury segment and are widely used from marketing departments of Luxury Hotels not only for new customers' recruitment but also for guests' retention. Other participants are more skeptical about the decisive role of Smart technologies in revisiting intention. They argued that Smart technologies are considered as necessary components for the majority of business entities in any case; as they claimed, the society of South Korea is accustomed to the use of digital items so, even though the implementation of Smart technologies in hospitality businesses contributes to guests' satisfaction, they are not sure that smart technologies are included in the main lures of Luxury hotels.

All the respondents shared the common opinion that the personnel of Luxury hotels, either they are back office employees or front line staff, are favorable to smart technologies. This positive stance is justified since the accomplishment of daily tasks and duties are getting easier and employees become more productive with less effort. Except from the prolific results to their performances, employees also appreciate the contribution of smart technologies in their professional training, especially the new-hired. With remote training and virtual sessions, Luxury and Upper Upscale hotels give the opportunity to the new- hired staff to counterweigh the lack of experience with professional knowledge, eliminating the probabilities of errors occurrences and misunderstandings. The more experienced employees are also benefited from smart technologies from the aspect of vocational training, since they are always informed about state of the art advancements in hospitality sector. Interviewees claimed that smart technologies are consider as a valuable mean for job seekers in hospitality industry whereas the Luxury and Upper Upscale hotels in South Korea use mostly smart technologies for the recruitment of personnel than face to face interviews. In a nutshell, employees of luxury hotels do not consider the extensive implementation of smart technologies as a job threat- on the contrary, they look for it.

Concerning the environmental issues, Luxury and Upper Upscale Hotels are seeking the investment in Smart Technologies which contribute to the efficient monitoring of energy consumption with the aim of decreasing the energy expenditures in the long run. The adoption of Smart technologies has also lessened the in- room water waste as well as in housekeeping and food and beverage departments. Minimizing paper waste has been proved also beneficial for the natural sources and for the reduction of operating cost. For example, during the conduct of an interview, the participant mentioned: *"Less printing! (...) Digital info, like menus, is easy to adjust without the need to reprint it"*. Only one interviewee expressed his doubts about the importance of smart technologies in the environment, or – to express it more properly- about the motives of implementing smart technologies for the benefit of the environment. He supported that, even though the application of Smart technologies is beneficial to the environment, the reason of adapting them stemmed from the need for cost reduction rather than from pure environmental concern.

There wasn't unanimity among the respondents about the role of Smart technologies in confronting the noticeable decline of tourists' inflows in South Korea. Some participants pointed out the importance of Smart technologies in Customer Relation Management. In particular, they mentioned that Smart technologies allowed marketing and guest relations departments to preserve the contact with prior customers, namely former guests from China, while they enhance the entrance of Luxury hotels in new market segments. Other participants argued that Smart technologies have not much to offer for the resolution of this situation. However, all the participants agreed that the landscape in Korean hotel market still remains blurry for this year, so they are in pending of seeing the impact of Smart technologies implementation in tourist inflows recovery.

Finally, respondents agreed that Smart technologies can offer a wide range of possibilities for sustainable development in hospitality industry. Since technology evolves, Luxury and Upper Upscale hotels of South Korea work intensively on becoming more digitalized regarding the offered services and the operational administration. Respondents expressed various proposals about the implementation of smart technologies in many sectors of Luxury Hotel Businesses, such as provisions of alternative e- commerce services or with the form of credit to efficient employees. After the outbreak of covid19 pandemic, hoteliers of South Korea count on smart technologies to cover the growing demand for delivering untact services and complying with the safety protocols. Luxury hotels invest in virtual databases, where store and retrieval of data is ease with the aim of adjusting services in guests' special needs and preferences and offering more personalized leisure experiences. Interviewees agreed that the integration of smart technologies has improved the performance of Luxury hotels. Though, Smart Technologies have not been applied with the same way for each department. A few hotels pursue the integration of smart technologies which improve cost control policies whereas other hotels invest mostly to the use of smart

technologies which augment their sales. Some of the interviewees expressed their anticipation of seeing how virtual reality will be combined with hospitality services in the future.

6. Discussion and conclusions

Luxury hotels in South Korea were proved to be more resilient in covid19 financial side effects than other hospitality businesses due to the widespread implementation of smart technologies in their operation modes. They became more flexible and adaptable to the new health and safety protection requirements, which counted a lot to guests' perceptions. They managed to ensure better working conditions for their staff and more career opportunities for younger job- seekers. Smart technologies facilitate the rational allocation of revenues in Luxury hotels function and the decision making processes from the managers' perspective. Responsible consumption of paper, water and energy has been achieved in a remarkable degree from Luxury hotels because of smart technologies' integration.

The aforementioned associated directly with four of United Nations Sustainable Development Goals, which included in the Agenda of World Tourism Organization. The goals are the followings (World Tourism Organization, 2016):

Goal 4th: Quality education. With the use of Smart technologies, Luxury hotels in South Korea managed to offer opportunities of vocational training to their workforce so as to provide them with new skills and professional knowledge.

Goal 8th: Decent work and economic growth. Smart technologies contribute to the economic growth of Luxury Hotels, which in turn creates new jobs in hospitality sector. In addition to this, employees, with the assist of smart technologies, spend less of their working hours in the accomplishment of repetitive tasks so they have more time to be more creative and to focus on customer centric services.

Goal 9th: Industry, Innovation and Infrastructure. Luxury hotels have taken advantages of Smart technologies usage and they have renovated their infrastructure so as to be proactive and adjustable in new challenges.

Goal 12nd: Responsible Consumption and Production. The rational consumption of natural sources, such as water and paper, is attributed in the implementation of smart technologies and therefore results in a more efficient operation of hospitality businesses.

The financial cost of cutting edge Smart technologies is not affordable for all the hospitality enterprises of South Korea. However, Smart technologies are an investment which yields short and long- term profits and improves the performances of hospitality businesses. Contrary to the findings from other studies about the precariousness of workforce due to the extensive usage of Smart technologies, for employees of Luxury Hotels in South Korea, the integration of smart technologies is not appraised as a menace but as a virtue. It would be interesting for the stakeholders of hospitality industry to find ways so as to get more benefits by Smart technologies potential in the future.

6.1 limitations and proposals for further research

There are several limitations in this research, which led to proposals for new studies. The first one concerns the social context of the research. South Korea is a country where citizens are favorably disposed towards technological innovations and Smart technologies are part of the daily flow of business. It is normal then Smart

technologies to be included in the daily operation of Luxury hotel departments. Though, in other countries or societies, the embedded technologies may not bring the same results as in the case of South Korea.

Secondly, the research focused on Luxury and Upper Upscale hotels since they are one step forward in the adoption of advanced technology compared to Midscale and Economy hotels. Therefore, they can get easier the outcomes – positive or negative- from the implementation of Smart technologies and to adjust their policies. So, scholars could explore the impact of Smart technologies in other hospitality segments in terms of efficiency and sustainability.

Thirdly, the participants are executive managers who have the overall picture of the hotel functioning and of their departments as well. It would be interesting however to investigate directly the opinions of the staff who work on the front line or on the bottom stage, e.g. chambermaids or waiters.

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