

Top quality hotel managers' perspectives on smart technologies: an exploratory study

Hotel
managers and
smart
technologies

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Abstract

Purpose – The main purpose of the study is to reveal the hotel managers' perspectives strategies, and predictions on smart technologies, and their expectations for current staff and potential staff to be employed in the future.

Design/methodology/approach – A qualitative research approach was used to reveal the internal perspectives of managers to determine their Smart Tourism (ST) perspectives. With the snowball sampling method, face-to-face interviews were conducted with 16 senior hotel managers working in a 5-star hotel in Antalya. The data obtained were carried out with inductive content analysis and descriptive analysis from qualitative research analysis methods.

Findings – In this study, hotel managers' broad perspectives on ST were discussed in depth and presented comprehensively. Managers' perceptions of smart technologies are classified in terms of aggregate dimensions and themes. Among the most important findings, rapidity/quickness, managing/holistic assessment, standardization, harmony/integration-coordination and experience-memory, defined as the crossroads of total dimensions or the heart of smart technologies, were identified as the most important themes. In addition, Stylos *et al.* (2021), another important finding is the classification of technologies used in top-quality hotels, based on the conceptual framework for smart technologies presented in the literature.

Practical implications – The effective and efficient use of technology, its internalization and openness to technology provides important advantages in hotels such as increasing revisits and satisfaction, providing loyalty and reducing costs. Thus, the perceptions, practices, strategies and prediction of senior managers working in high-level hotels about ST provide valuable data to other hotels that want to survive in the competition.

Originality/value – From a theoretical point of view, this study is valuable in that it deals with the ST perceptions of senior managers with an exploratory research approach. Managerially, the research findings offer valuable contribution about the attitudes, trends, forecasts and expectations of senior managers working in high-level hotels towards ST.

Keywords Smart technologies, Smart tourism, Smart hotel, Hotel managers, Antalya

Paper type Research paper

1. Introduction

Technology affects our lives in every field, as well as the tourism sector (Kim and Han, 2020). As consumption and experiences in tourism become smarter, it is thought that the supply and demand for the use of ever-increasing innovative smart technologies will increase (Tribe and Mkono, 2017). Smartness leads to sustainability and improved quality of life for citizens, tourists and all stakeholders through technology that supports collaborative decision making. Smartness refers to the redesign of processes and data to deliver innovative product procedures for all stakeholders and leverages interconnectivity and interoperability to redesign (Buhalis, 2022). Based on the use of smart technologies in tourism, ST aims to include smartness in its products by being influenced by global developments in many



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sectors (Buhalis and Leung, 2018) and provides an infrastructure for creating value together (Buhalis, 2022). However, smartness in tourism should not be viewed only in relation to technological capabilities (Stylos *et al.*, 2021), smartness should also be seen primarily when examining stakeholders' interactions, experiences and related benefits (Buhalis, 2020).

ST is one of the popular research topics in the tourism industry (Stylos *et al.*, 2021). Smart hotels (Yang *et al.*, 2021), which emerged in 2008 and became popular in recent years, can be defined as the heart of the tourism industry in terms of technological application (Buhalis and Leung, 2018). The integration of contemporary information technologies such as the internet of Things (IoT), cloud computing, smart devices and big data has accelerated the development of smart hotels. The smart hotel is designed for service automation and efficiency based on the use and integration of various advanced technologies such as artificial intelligence, digital devices, information technology and robots (Yang *et al.*, 2022). A smart hotel is defined as a hotel that adopts a variety of advanced technologies to provide customers with non-traditional and more technology-driven experiences (Kim and Han, 2020). This technology offers hotel managers the opportunity to earn higher profits by providing various cost savings, and also provides a competitive advantage by creating a memorable tourist experience (Stylos *et al.*, 2021). Although there are many studies on smart hotel technologies (Wu and Cheng, 2018; Wan *et al.*, 2019; Kim and Han, 2020; Yang *et al.*, 2022), there are limited studies on hotel managers who plan to use smart technologies (Stylos *et al.*, 2021). Likewise, ST stands for three main components that are interconnected through Information and Communication Technologies (ICTs): smart destination, smart business understood as the creation of interactive platforms between private and public tourism stakeholders, smart tourists expressing the social change caused by the convergence between ICTs and the tourist experience (Ballina *et al.*, 2019). While most of the projects and research carried out are handled in the context of smart destinations, interest in smart tourists is increasing. However, the core area that makes up the smart business component has not been adequately studied and the available evidence is limited and inconsistent (Ballina, 2022). The focus of this study is smart businesses in the tourism sector. Besides shedding light on the present literature on the smart hotel business, the main purpose of the study is to reveal the internal perspectives of senior managers working in high-quality hotels, their strategies, their applications in their own businesses, their predictions about the future change of smart technologies, and their expectations from the current and future personnel they plan to employ. In addition, the sub-purpose of research is (1) to reveal the perceptions of the managers towards ST and which features, and functions of the concept are more important-valued, (2) determining the state of what new technologies do they use in their businesses based on departments, (3) determining positive and negative features of ST, (4) unfolding strategies of enterprises against ST and the predictions of managers for the future change of ST, (5) it is how to adapt the existing staff and to reveal their expectations from the staff they plan to employ in the future. In line with this purpose and sub-purpose, within the scope of the research, interviews were held with senior managers who are actively working in high-quality hotels in Antalya destination, which increases the technology density day by day and starts to use technology effectively and efficiently. Thus, it is aimed to reflect the current status and future strategies of top-quality hotels in Antalya destination towards smart technologies and the perceptions of senior managers regarding the concept.

In this study, first, digitalization and development in the tourism industry and then the concept of ST are discussed. The method was designed with three subheadings: sample and data collection, instrument and reliability and validity. Afterward, the research findings were presented, and the research results were discussed in depth in the discussion and conclusion sections. Finally, the theoretical and practical implications and limitations, and suggestions for future research are presented.

2. Digitalization in the tourism industry

Technological progress and tourism have developed in an integrated way for many years (Buhalis and Law, 2008). Developments in information technology have caused major and fundamental changes in tourism (Pesonen and Horster, 2012). The tourism industry has adopted the Internet as a new distribution channel since the mid-1990s, and this has accelerated the development of e-commerce, causing it to become a leading practice. In the 2000s, tourists started to adapt to the use of online tools and to use the Internet intensively and effectively in transactions related to their travels. In this period, the tourism sector has also started to use new technologies as a marketing tool rapidly (Huang *et al.*, 2017). Today, the number of mobile devices such as smartphones, tablets and computers is increasing day by day and tourists use these devices before, during and post-travel. The increasing use of mobile devices in travel and tourism is an indicator of the continuous development of digitalization and smart technologies in the tourism industry (Pesonen and Horster, 2012). The rapid development of smart technologies has reshaped the tourism industry and created new opportunities for businesses to understand and interact with their customers in real-time, deliver more personalized and contextualized services and optimize resource allocation (Law *et al.*, 2021).

Technology is intertwined with various aspects of life and enables communication and cooperation between people. This development has increased the importance of both data-driven destination management decisions and high-level tourist experiences that can be achieved by means of ST. Further, progress in the tourism industry is important to researchers and industry professionals because of its ability to provide meaningful, timely data and make connections among tourism stakeholders (Johnson and Samakovlis, 2019). Hence, recently, thanks to the developments in devices, sensors, microchip design and ICTs, an increase in smart services has been observed in various service industries and especially in the tourism sector. A few years ago, smartphone-based mobile check-in, keyless hotel room entry and mobile boarding passes were introduced, followed by robots serving as butlers, bellhops, or customer service assistants. However, industry practitioners consider these developments as a start and it is expected that there will be a significant increase in the use of smart technologies in the industry in the future (Kabadayi *et al.*, 2019). It is also highly competitive in the tourism industry as customer expectations and preferences are constantly changing. Businesses in the tourism industry must embrace innovation and adopt the latest technologies to satisfy their customers and differentiate their products from their competitors. In this respect, it is vital for businesses in this industry to survive (Law *et al.*, 2021), stay competitive and stand out by providing an authentic experience.

3. The concept of ST

The concept of ST emerged from IBM Corporation's idea of a "Smart Planet" (Law *et al.*, 2021) and the rapid development of ICTs has recently made the term "smart" quite fashionable (Habeeb and Weli, 2020). To date, smart systems have been introduced in many areas, including economic growth, sustainable development, public safety, health care, public education, infrastructure construction, energy conservation, water supply and environmental protection. Although the concept of ST, which emerged with the development of smart cities, can be seen as new both theoretically and practically (Wang *et al.*, 2016), with the intense use of technological developments in many areas, nowadays, destination policymakers and hotel managers have both increased their interest in smart technologies and they have started to use smart technologies effectively.

Tourism makes extensive use of the smart concept (Mehraliyev *et al.*, 2020). By now, there has been no consensus on the definition, methodology, application, features and functions of the concept of ST (Ballina *et al.*, 2019). One of the main debates about the concept stems from

the fact that “smart” and “intelligence” are seen as similar and interchangeable concepts in the literature. However, these terms have different meanings from each other. Intelligence means being able to change one’s state or action in response to changing situations, different needs and previous experiences. This means that intelligence can produce appropriate results based on different needs, different situations and different historical experiences. However, “smart” means doing the right thing in various complex situations; therefore, calling a program “smart” is different from calling it “intelligence”. The content of “smart” is more comprehensive and requires large data entries. Moreover, while “intelligence” enters the field of technology, “smart” gives more importance to technological results for people (Li *et al.*, 2017). In addition, the concept of smart is defined as being wise, who sees the truth well, and acting accordingly the TDK (Turkish Language Society) Dictionary (TDK, 2022), while in the Chinese Xinhua Dictionary, “smart” is defined as the ability to understand and solve problems quickly, flexibly and accurately. The English definition of smart is wisdom, the quality of having experience, knowledge and common sense; it is considered as the quality of being wise (Li *et al.*, 2017). In sum, it can be inferred that there are different perspectives in the literature on the basic meaning of the concept. A similar situation exists when it comes to defining the concept in terms of tourism. In other words, the perspectives of the researchers on the concept caused the definitions to differ. ST is a multidimensional technology consisting of infrastructure and communication systems (Habeeb and Weli, 2020) or a concept that represents the convergence of ICTs and tourism and also expresses the transformation of tourism through technology (Lee *et al.*, 2020). Dorcic *et al.* (2019) defined ST as the use of technologies to collect massive amounts of data and provide real-time support to all stakeholders in the destination. Also, Gretzel *et al.* (2015) express that ST includes three principles: smart information, smart exchange and smart processing, and is developed under two related premises: technological ubiquity (wireless) and the creation of on-site individual experiences. From a broader perspective, ST is an integrated approach that integrates tourism resources such as artificial intelligence, cloud computing and the IoT and ICTs to provide tourists with clear information and satisfying services based on the development of innovative mobile communication and aims to provide tourists with open information and satisfying services platform (Wang *et al.*, 2016).

Collecting and analyzing data from various sources has become a vital condition with the use of advanced information technologies to make travel experiences richer, more efficient and more sustainable (Lee *et al.*, 2020). In this regard, ST can be seen as a social phenomenon arising from the combination of ICTs with tourism experience (Hunter *et al.*, 2015), while it has significantly changed the way visitors make various travel decisions (before, during and post-travel), such as transportation, accommodation and activities available at the desired tourism destination by the means of smart technologies (Lee *et al.*, 2018). While smart technologies are a term that defines the product, situation, or movement of a technology that can be adapted to certain functions or certain conditions and includes various functions (Gajdošík and Orelova, 2020), ST technologies mean general and special applications that can create added value (Neuhofer *et al.*, 2015), and increase competitiveness as well as improving the experiences of tourists. ST technologies are the “umbrella term” for many advanced technologies that emphasize connectivity (Gajdošík and Orelová, 2020). Artificial Intelligence AI (Filieri *et al.*, 2021; Mariani and Borghi, 2021; Ivanov *et al.*, 2019), robotics (Romero and Lado, 2021; Ivanov and Webster, 2021; Tuomi *et al.*, 2020; Tussyadiah, 2020), IoT (Pelet *et al.*, 2021), NFC (Pesonen and Horster, 2012), smartphones and mobile applications (Ricci, 2011), Chatbot (Loureiro *et al.*, 2021; Jiménez-Barreto *et al.*, 2021), Augmented Reality (AR) and Virtual Reality (VR) (Buhalis, 2020), big data (Stylos *et al.*, 2021a), QR code, blockchain (Çelik and Topsakal, 2019), cloud computing, ubiquitous connectivity via Wi-Fi, radio frequency identification (RFID), sensors, smart cards and social networking sites can be given as examples of smart technology (Jeong and Shin, 2020).

Today, these smart technologies have become a driving force in the operations of tourism organizations, a key element in the innovation of products, processes and management and a factor in attracting visitors (Neuhofer *et al.*, 2015). Smart hospitality provides a number of benefits to hotels such as increased productivity, streamlined operations, increased satisfaction and increased profitability. In addition, in sales and marketing, obtaining accurate, reliable, real-time data provides important data for both hotels and the ecosystem as a whole for guests (Buhalis and Volchek, 2021). Providing more comprehensive information on guest preferences can also be used to personalize guests' experiences at hotels, increase customer satisfaction and minimize costs (Buhalis *et al.* 2023). The impact of smart technologies in the hospitality industry can be summarized in four areas: strategic planning and revenue management, operations, marketing distribution and communication and customer service and relationship management (Gajdošík and Orelová, 2020). Smart technologies can also facilitate employee-customer interaction and increase service efficiency (Marinova *et al.*, 2017). While the adoption of smart technologies provides advantages in various aspects such as profitability and low cost in terms of hotels, employees may face difficulties such as adopting new technologies and job loss.

Employees are vital in creating memorable experiences by providing services that increase satisfaction and profitability. The hospitality industry is notorious for difficult and stressful working conditions, long and inhumane working hours and low wages, and is competitive and struggling to recruit enough qualified personnel. However, some of the jobs in the hospitality industry are of low quality and one of the biggest expense items for hotels is labor cost (Buhalis *et al.* 2023). Smart hospitality can help relieve employee burden by eliminating repetitive and monotonous tasks, while improving the work environment, reducing stress and providing more engaging and satisfying roles for employees (Ivanov *et al.*, 2020).

Over the last decade, hotels have turned to digitize a variety of services to provide convenient, efficient and unique guest experiences. For example, recently Hilton Worldwide Holdings Inc. developed a digitalized hotel service system called "Digital Key" and introduced it in many hotels. Using the digital key, hotel guests can access self-check-in/out services without interacting with the front desk personnel. Similarly, many global hotel chain companies (e.g., Marriott International and Hyatt Hotels Corporation) have introduced digitized service functions for online booking, room selection, room service, concierge and personalization (Choi *et al.*, 2020). Moreover, Henn Na Hotel (Japan) uses robots to deliver guest luggage to their room, while Hilton (USA) uses robots for concierge services (Yallop and Seraphin, 2020). Considering all these developments today, radical changes have occurred in employees, tourists, suppliers and the ecosystem with the reflection of smart technologies on tourism. In this respect, it is essential to investigate smart businesses in the hotel industry and constitute the focus of the study.

4. Methodology

An exploratory research approach has been adopted within the scope of this study, which aims to reveal managers' perspectives on smart technologies. Through this approach, it is aimed to reveal in depth how managers adapt their employees to new technologies, how they transform their own businesses in terms of using smart technologies and their strategies for this, their predictions for the future and their expectations for potential employees, particularly when employing new personnel. The qualitative research method is "*a research approach that focuses on exploring individuals' experiences of a phenomenon by collecting or analyzing narrative or text data expressed in words or images*" (Clark and Ivankova, 2016). The fact that it is carried out in a natural environment and has features such as revealing the intrinsic worlds of people in depth (Creswell and Creswell, 2018) explains the reason for

choosing the qualitative research method within the scope of this paper. Phenomenology, it is aimed to reveal meanings by describing facts, objects and situations with integrity and from multiple directions (Karagöz, 2017). Also, it focuses on a phenomenon that individuals are aware of but do not have an in-depth and detailed understanding of. Phenomena can take various forms such as fact, situation, concept, experience, perception and orientation. Therefore, phenomenology constitutes a suitable research ground for studies conducted on the research of phenomena that individuals are not strangers to, but also cannot fully comprehend (Yıldırım and Şimşek, 2013). In other words, the aim of the phenomenology research design is to reveal reality through individual perspectives and experiences (Ersoy, 2017). In light of this information, in line with the research purposes, the literature was examined in depth and a total of 8 questions were formed. Afterward, an academician who is an expert in smart technologies in tourism enterprises was asked to examine the questions, and the interview form was redesigned in the form of 8 open-ended questions that did not limit the participants in a certain way within the scope of return suggestions and directed them to reveal their inner perceptions about smart technologies. The questions are as follows:

- Q1. What do smart technologies mean to you, how would you describe it?
- Q2. In which departments/areas are smart technologies used in the hotel business?
- Q3. What kind of positive and negative effects can smart technologies have on a hotel business?
- Q4. Does your business have a strategy for the use of smart technologies? Do you think if there is no strategy?
- Q5. When you evaluate the period before and after the COVID-19 pandemic in your business, is there any change in interest or awareness toward the use of smart technologies?
- Q6. How do you think smart technologies will shape a hotel business in the future?
- Q7. Do you have any strategy for the compatibility and competence of your current staff towards smart technologies?
- Q8. What kind of expectations does your business have for using or being able to use smart technologies in the personnel you plan to employ in the future?

4.1 Sampling and data collection

The research was carried out in Antalya, which is one of Turkey's important (Cakar, 2018) and leading (Ozdemir *et al.*, 2012) tourism destinations. The reasons for conducting the research in Antalya can be listed as follows: the high number of top-quality hotels (There are a total of 428 five-star hotels (Antalya Valiliği, 2022)), the variety of hotels that appeal to different concepts, the high tendency of hotels to use innovations, that is, smart technologies, due to the high competition both locally, regionally and internationally. Indeed, Karamustafa and Yılmaz (2019) emphasize that it is vital for hotel businesses in Antalya to include ST technologies due to high guest density, high business volume and intense competition. Also, in the first months of 2015, Antalya Metropolitan Municipality announced to the public that it started a project to become a smart city in tourism, transportation, health, security and municipal services. Within the scope of the project, it has been announced that free Internet, electronic traffic control system, smart public transportation system, ST points, unmanned service points, smart health service, barrier-free SMS system, smart environment and smart energy systems will be installed (Çelik and Topsakal, 2017). In addition to this, there are

various mobile applications in Antalya such as Rota Antalya, Antalya SmartGuide, AntalyaTravel, Antalya Map and Walks and visitors have the opportunity to convey their complaints and suggestions to public and related institutions and can easily access online information through these applications (Erdem, 2022). As a reflection of the smart city project on hotel businesses, hotel businesses have started to focus more on smart technologies since 2015. In this regard, the research population consists of senior managers (CEO, general manager, assistant general manager, IT manager, etc.) working in top-quality (five-star) hotels in Antalya. The snowball or chain sampling method, which is one of the purposeful sampling methods, was preferred in the research. The snowball sampling approach has been preferred because it is used to reach people who can provide rich information about the subject (Patton, 2014) and because it can reach senior managers that we have met within the scope of various studies-projects in the hotel sector and reach the wide circle of these professional managers. The research was carried out between February and April of 2022. We reached out to professional hotel managers we know in the sector, and through them, senior hotel managers working in 16 different hotels were interviewed. After examining the data obtained, when it was seen that the answers given in the interviews started to repeat, and reached the saturation point, it was decided that a sufficient number was reached in the research data collection process and the research data collection process was terminated. Due to the nature of the qualitative study, there is no recommendation or limit on the number of samples, and the researchers decide on the basis of certain criteria that the number of samples is sufficient. Karagöz (2017) emphasizes that a small sample should be preferred to make an in-depth analysis of the case or situation examined in phenomenology studies. Meetings with senior managers were made face-to-face, with an average of 15–40 min. Data obtained from senior hotel managers working in 16 different hotels were coded in the names and codes between P1 and P16 were given to the participants because the participants wanted their hotel names to be kept confidential.

4.2 Instruments

The aim of this study, which adopts the qualitative research method, is to reach analytical generalization by exploring the situation examined in depth instead of reaching generalizable information. Questionnaires obtained during the research period were evaluated using descriptive analysis and content analysis, which are qualitative research analysis methods. Descriptive analysis is a type of qualitative data analysis that includes summarizing and interpreting the data obtained by various data collection techniques according to predetermined themes (Yıldırım and Şimşek, 2013). Content analysis is analyzed by dividing the data obtained from verbal, written and other materials into categories with the help of keywords or codes. In this context, main themes and related sub-themes are formed and classified according to their importance and frequency (Kyngas and Vanhanen, 1999). The qualitative research data obtained were evaluated by subjecting them to content analysis in four stages: coding, finding themes, organizing codes/themes, and defining/interpreting the findings.

4.3 Reliability and validity

Reliability and validity are very important in qualitative research as in quantitative research. The following procedures were carried out to ensure the reliability and validity of the research:

- (1) No guiding explanation was made in the interviews held in order to ensure construct validity, and the personal views of the participants were tried to be conveyed as they were during the evaluation of the data.

- (2) While creating the interview form in the context of internal validity, the literature was examined in depth, and questions were prepared in this context. An academician who is an expert on the method and on smart technologies was asked to evaluate the questions created, and after the feedback, the interview form was revised and finalized.
- (3) The procedures related to the research process on external validity were explained in detail and the data obtained were presented in detail and comprehensively, and the findings were interpreted through analytical generalization.
- (4) To ensure internal reliability, all the findings are given as they are, without any comments. Content analysis was carried out on the data obtained from the interviews. In the content analysis, support was requested from 4 academicians who are experts in their fields regarding coding reliability, and each academician made separate codes and the consistency rate was calculated. The Kappa statistic was developed to determine the degree of agreement between two raters scoring at the classification level (Cohen, 1960). However, the Kappa statistic, which was limited to two raters, was generalized by Fleiss (1971) so that it can be used to determine the agreement between more than two raters. In this respect, the calculation was carried out based on Fleiss, since there were 4 raters in the study. The obtained Kappa statistical value is presented below the relevant Figure, and each value indicates a high agreement between the encoders (Karagöz, 2017).
- (5) To ensure validity and reliability, the literature was examined in depth and the findings were supported with resources, support from 2 different academicians, and the triangulation strategy was used with the contributions of the article authors.

5. Results

The main focus of the research is to shed light on managers' awareness of smart technologies, their perspectives and policies towards technology acceptance and diffusion in their businesses and their predictions about the future with technologies. Revealing the internal perspectives of senior managers on smart technologies is important due to the scope of the research. In this regard, smart technologies have important functions in the whole process from the beginning of the holiday experience of the participants, including the process until the decision-making stage of the tourists, to the end of the experience, including returning to the place they came from and sharing their experiences on various social media platforms and participant comments showing that they are aware that smart technologies have a key role in creating the memorable experience:

... We can actually take it from the beginning ... The use of smart technology can go back to the decision-making phase. It goes back to the beginning, this process starts at Check-in, and then it can be used throughout the whole holiday experience ... (P1)

... The guest side starts with marketing. Thanks to cloud technology, hotel-related words are scanned, occupancy rates are checked, and sales can be realized ... Then there is a system we call "Trust you". After the experience, the comments of the guests written in 3-4 different channels are separated as positive and negative words and give us feedback ... (P4)

... To dream of a life without smart technology means to be without much oxygen ... (P9)

... Smart technologies make life easier, increase standardization and reduce the margin of error; it is a whole formed by a person who cannot think for a person, but who thinks ... (P10)

Considering these comments, it is understood that the demand and supply side of the tourism industry is becoming more technology-oriented with each passing day, and this

transformation is a necessity in terms of staying competitive. After the participants' views on smart technologies were presented, the demographic data and themes of the research, which included 16 participants, were detailed in the continuation of the study through tables and figures.

Within the scope of the research, interviews were conducted with managers working as senior managers in top-quality hotels in Antalya destination. When the demographic data of the interviews conducted with 16 volunteers are examined, the average age of the participants is 40.56, and the age range varies between 32 and 57. According to the data collected from 4 female participants and 12 male participants, it is seen that 9 people have a bachelor's degree, 4 have a master's degree, 2 have a high school and 1 has a doctorate degree. The average professional experience of the participants in the field of tourism is 19.68 years and their working experience is between 7 and 41 years (see [Table 1](#)).

In the statements of the research participants about what smart technologies mean to them or how they define them, content analysis was carried out and then divided into themes. As a result of the content analysis, the themes were discussed under two main headings as positive and negative. In [Figure 1](#), themes and aggregate dimensions of smart technologies are given. The positive features of managers towards smart technologies are divided into themes such as convenience, competitive advantage, cost and time savings, rapidity/quickness, managing/holistic assessment, standardization, harmony/integration-coordination, experience-memory, satisfaction and accessibility. These themes were associated with three aggregate dimensions: productivity-efficiency and profitability, value creation (inspired by [Samara et al., 2020, p. 355](#)) and competitiveness. Whereas the aggregate dimensions are associated with the themes, since most of the themes cannot be associated with a single aggregate dimension, they are presented as a cluster to show the relations in a holistic way. Conversely, negative features are divided into themes such as laziness, reducing creativity-molding/shaping people, reduction of labor and routinization of work life.

The use of smart technologies in hotels is summarized in [Table 2](#) according to the departments. Framework for the use of smart technologies in the hotel ecosystem, [Stylos et al. \(2021\)](#), was classified based on three aggregate dimensions and themes in the study. [Stylos et al. \(2021\)](#) divided the smart technologies used in the hotel ecosystem into aggregate

Participants	Age	Gender	Education	Working time in industry
P1	38	Male	Bachelor	14
P2	40	Male	Bachelor	26
P3	36	Female	Master	22
P4	33	Male	Bachelor	17
P5	32	Female	Master	9
P6	34	Female	Master	8
P7	40	Male	PhD	19
P8	42	Male	Master	19
P9	57	Male	Bachelor	41
P10	56	Male	Bachelor	35
P11	38	Male	High School	24
P12	41	Male	Bachelor	15
P13	41	Female	High School	19
P14	39	Male	Bachelor	11
P15	32	Male	Bachelor	7
P16	50	Male	Bachelor	29

Source(s): Author's own creation

Table 1.
Profile of participants

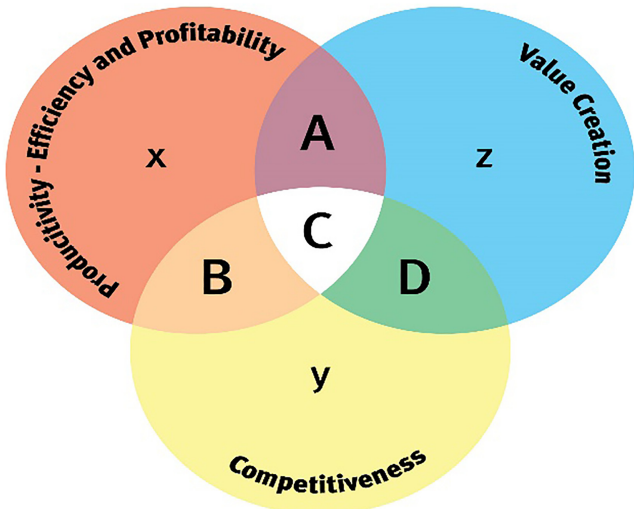


Figure 1.
Positive features
attributed to the
concept of smart
technologies by
managers

Note(s): Kappa = 0.85-B = Cost and time savings;
C = Rapidity/Quickness, Managing/Holistic assessment,
Standardization, Harmony/Integration-Coordination,
Experience-Memory; D = Satisfaction, Accessibility;
x = Convenience; y = Competitive advantage
Source(s): Author's own creation

dimensions and themes such as smart systems configurational innovation (customized technical solutions, design openness, internetworked applications), smart hotel sustained learning (organizational compatibility, organizational adaptability, organizational resource effectiveness, knowledge accumulation), smart networks synergism (hotel – third-party smart interactions, hotel – guests smart interactions, hotel – local community smart interactions).

Smart technologies used in *Food and Beverage-Culinary* departments are divided into three themes as customized technical solutions (Digital QR menus, pos system, kiosk device, contactless payment and digital bill), organizational compatibility (stock control systems, smart air conditioning system, smart cooking units, barcode reading system, distribution system (food and other), order and barco vision system), hotel-guest smart interaction (order and barco vision system). Intelligent technologies in *Purchasing and Sales* departments are classified under the themes of organizational compatibility (data processing, pricing system), hotel-guest smart interaction (guest registration systems) and hotel – third-party smart interaction (pos systems, accounting systems). Smart technologies in *Front Office and Guest Relations* departments are divided into themes as customized technical solutions (mobile apps, smart pass cards, room entry symbols, tablets, smart clocks, contactless payment, guest registration systems, online, online guest comment-suggestion and complaints systems), hotel – guest smart interaction (social media promotion, reservation systems), organizational compatibility (communication network among employees), organizational adaptability (loyalty program, online hotel review management). In the *Housekeeping* department, smart technologies are the theme of organizational compatibility (mobile apps, room tablet and stock control system) for hotel management (by supply side), and customized technical solutions theme for hotel guests (demand side) (room energy system, smart air

Participants	F&B –Culinary	Purchasing and sales	Front office and guest relations	Housekeeping	IT and technical services
P1	Digital and QR Menus	Pos Systems	Mobile Apps - Social Media Promotion	Mobile Apps	
P2	Digital and QR Menus	Pos Systems	Reservation Systems - Smart Pass Card - Room Entry Symbols		
P3	Stock Control System - Pos Systems - QR Menus	Pos Systems		Mobile Apps	
P4	Smart Menus and Stock Control Systems		Smart Clock -Tablet - Online Hotel Reviews Management (Online Response/Reply) Loyalty Program		
P5	QR Menus - Pos Systems	Guest Registration System		Mobile Apps	Data Storage
P6	Smart Menus - Stock Control System - Pos Systems - Kiosk Device - Smart Ovens - Intelligent Air Conditioning Units		Reservation Systems - Contactless Payment - Communication Network among Employees	Room Tablet	Data Security
P7	Contactless Payment		Reservation Systems - Online Hotel Reviews Management Reservation Systems		
P8		Guest Registration System Accounting Systems			
P9	Kiosk Device - Smart Ovens - Contactless Payment and Digital Bill			Mobile Apps	Intelligent Fire and Security System
P10	Barcode Reading System - Smart ovens - Chemical Distribution System -Stock Control System - Order System		Loyalty Program		Data Storage and software
P11	Contactless Payment - QR Menus	Guest Registration System -Accounting Systems	Reservation Systems -Contactless Payment	Mobile Apps	Room Maintenance System
P12		Data Processing and Analysis	Guest Registration Systems -Online Guest Comments, Suggestions and Complaints	Smart TV and Room Systems - Room Energy Systems	

Table 2.
Use of smart
technologies in hotel
business departments
(continued)

Participants	F&B –Culinary	Purchasing and sales	Front office and guest relations	Housekeeping	IT and technical services
P13	Barcode Reading System - Smart Ovens - Chemical Distribution System -Stock Control System - Barco vision Systems	Guest Registration System - Accounting Systems		Stock Control System (for use and distribution of chemicals)	Data Software and Security
P14	Contactless Payment	Guest Registration System - Accounting Systems	Reservation Systems - Contactless Payment		Data Software
P15	QR Code -Smart Menus - Stock Control System	Pricing Systems- Data Processing and Analysis	Online Guest Comments, Suggestions and Complaints	Smart Air Conditioning System	Data Storage
P16	QR Code - Smart Menus - Pos Systems	Guest Registration System - Accounting Systems	Reservation Systems - Contactless Payment - Online Guest Comments - Suggestions and Complaints		Data Software

Table 2. Source(s): Author’s own creation

conditioning system, mobile apps and room tablet) is represented by two themes. Smart technologies in *Information Technology and Technical Services* departments are themed as organizational compatibility (data storage, intelligent fire and security system, room maintenance system), internetworked applications (software) and hotel–guest smart interaction (data security).

The views of the managers on determining what kind of positive and negative effects smart technologies have in a hotel business were divided into themes after the content analysis. Opinions indicating positive effects were gathered under 5 themes and presented in Figure 2, while opinions on negative effects were grouped under 3 themes and presented in Figure 3.

The statements of the managers about the positive effects of smart technologies in a hotel business are presented on a theme basis:

One of the first positive effects of smart technologies that come to mind not only in hotel businesses but also in every aspect of human life is its financial contribution. Thanks to these technologies, people can make their lives easier, and save time and cost. Likewise, hotel businesses can benefit from these positive effects by reducing their operating expenses and saving time (Jaremen *et al.*, 2016). In this regard, the manager’s views on the *Time and Cost Savings* theme are as follows:

- ... Smart technologies mean saving time for me. It speeds up the process of some things and makes our daily life easier ... (P1)
- ... It eliminates workload costs and supports faster presentation, while saving time and costs ... (P14)

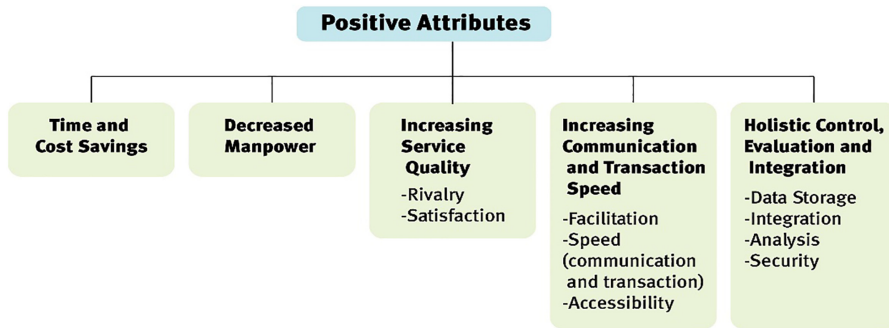


Figure 2.
Positive effects of
smart technologies on
hotel business

Note(s): Kappa = 0.73

Source(s): Author's own creation

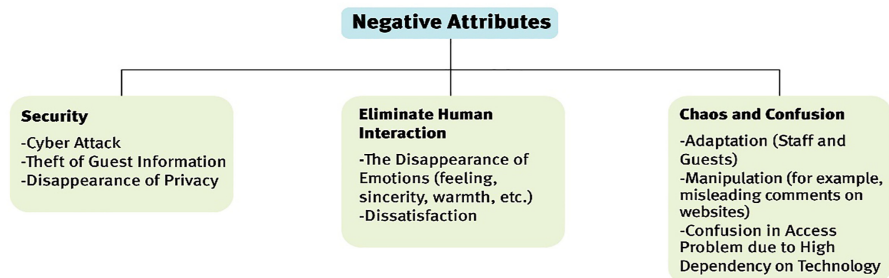


Figure 3.
Negative effects of
smart technologies on
hotel business

Note(s): Kappa = 0.96

Source(s): Author's own creation

Thanks to smart technologies, the workforce is also decreasing. In terms of businesses, this saves costs and reduces the margin of error. [Jaremen et al. \(2016\)](#) state that while approximately 40 people should be employed in a 102-room hotel, only 16 people are employed thanks to smart technologies. Smart technologies provide incredible savings in manpower, and managers' views on this effect are presented in the *Decreased Manpower* theme as follows:

... Thanks to smart technologies, manpower decreases in simple jobs and new jobs emerge ... (P1)

... Thanks to smart technologies, people's labor power can be partially reduced. For example, the software used in the front office and sales departments helps both in the reservation and sales departments and makes a significant contribution to the reduction of personnel who need to be in a shift ... (P13)

The intensive use of smart technologies in hotel businesses leads to increased satisfaction, and individualization, taking a step forward in the competition, and thus increasing the quality of service ([Nizic et al., 2008](#); [Petrevska et al., 2016](#)). Such positive qualities not only make businesses preferable but also play a key role in guest loyalty. These features were discussed under the *Increasing Service Quality* theme and the opinions of the managers on this theme are as follows:

... It raises the service quality standards of the business. Because the closer you are to technology, the more global you are and by following the world, you meet the requests of the guests ... (P13)

... In businesses focused on guest experience, smart technologies support service production ... (P16)

Participants point out that the communication with the guests and the operation of the hotel is fast thanks to smart technologies. Giving quick feedback on the complaints or requests of the guests, the rapid activation of the service offered within the hotel, as well as the coordination and speed in the operation of the business through smartness can have a positive effect on the guest experience. Thus, these features were discussed in the context of the *Increasing Communication and Transaction Speed* theme, and managers' opinions were presented:

... It creates a positive effect by accelerating operation and accessibility ... (P11)

... It ensures fast communication with guests ... (P12)

Participants talk about the positive effects of smart technologies on data storage, error reduction, integration, security and analysis. Recording the guest information, ensuring the security of the guest information, individualizing the service offered by using the visitor information, providing integration for the use of all the information obtained in various departments and preparing reports are important for the operation and decision mechanisms of the business. The theme that covers these features is *Holistic Control, Evaluation and Integration*, and the opinions of the managers about this theme are as follows:

... It is vital for the operation of the business to transfer the data correctly, perform data analysis and perform performance analysis accordingly ... (P5)

... It has positive effects on data storage, reducing transaction congestion, sustainability, and security. Guest information was written manually in previous periods. With the development of technology, various information about the guest is recorded in hotel programs. For instance, special requests, preferred products, addresses, telephone, and e-mail addresses can be recorded and can be reached when necessary ... (P15)

The opinions of the managers about the negative effects of smart technologies in a hotel business are presented on a theme basis:

One of the negative thoughts of the participants towards smart technologies is the issue of cyber security. Protecting data, not leaking information and measures taken against cyber-attacks are important in this regard. If a business experiences such a problem, the privacy information of the guests is under threat of being spread on the Internet and on all platforms. The theme that covers all these features is *Security*, and the managers' views on this theme are as follows:

... Protection of privacy is important. Guests provide all their private information, but how much can this information be protected through smart technologies? ... (P13)

... The downside is the issue of security. With cyber-attacks, private information such as guests' data and credit card information can be stolen ... (P15)

Participants accept the positive aspects of smart technologies, but state that the warmth, sincerity and feeling will disappear afterward. Since greeting a robot or thanking a machine cannot complete these feelings, the absence of a human element means that some of the emotions that play a key role in being preferred in a hotel business will disappear, and thus dissatisfaction may occur. In this respect, the opinions of the managers who noted the *Eliminate Human Interaction* theme as an important negative effect are as follows:

... I think it is the human virtues that set you apart from them. When a guest comes here, a guest cannot warmly greet a robot. From a humanitarian point of view, a robot will not be able to touch the feelings of the guest. There will be no emotional motivation ... (P3)

... The feeling of warmth captured by one-on-one communication will disappear ... (P11)

In the theme of *Chaos and Confusion*, the participants focused on the problems that arise in various subjects such as the malicious use of technology and the use of smart technologies and integration. Especially the smallest problem arising from the increasing dependence on technology can lead to big problems. Also, the level of use of technology by guests and employees is also important in the formation of problems, but negative comments by people who have not received service at the hotel on the Internet or social media platforms, their low ratings or manipulations of rival businesses are at the forefront as negative effects. Managers' views on chaos and confusion:

... People make comments without traveling without accommodation, which causes manipulation ... (P4)

... Dependence on technology is increasing, but the amount of chaos will increase if access is restricted in any way ... (P7)

The business strategies of managers for the use of smart technologies are summarized in Table 3. The topic of integration with digital innovations is among the most recurring responses. While mobile applications, utilizing QR code technology, finger-face recognition systems and sensors form the basis of business strategies, big data, crypto money payment systems, metaverse and virtual-augmented-mixed reality technology draw attention to the answers given.

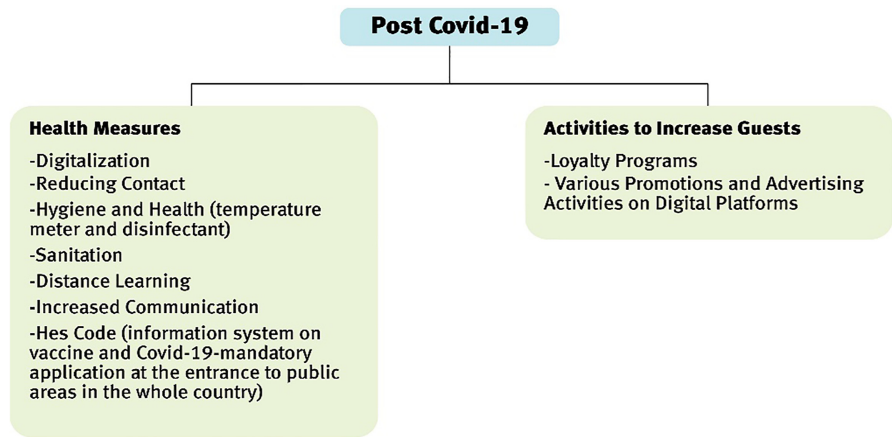
Managers' views on the use of smart technologies in hotel businesses for the post-COVID-19 pandemic period are grouped under 2 themes (see Figure 4).

Participants	Mobile Apps	Integration with Digital Innovations for Superior Service Delivery (IoT)	QR Code	Finger and Face Recognition System	Sensors	Big Data	Cryptocurrency Payment System	Metaverse	Virtual-Augmented-Mixed Reality
P1									
P2									
P3									
P4									
P5									
P6									
P7									
P8									
P9									
P10									
P11									
P12									
P13									
P14									
P15									
P16									

Source(s): Author's own creation

Table 3.
Hotel business strategy
for smart technologies

Figure 4.
Change in the use of
smart technologies in
hotel businesses after
COVID-19



Note(s): Kappa = 0.91
Source(s): Author’s own creation

Hotel businesses continued for a while in the post-COVID-19 period, as mandatory some of them as extra various health measures for the guests to feel safer, and also important measures continued to be implemented for employees as well as health measures for guests. In addition, the theme of *Health Measures*, especially the sub-theme of digitalization draws attention. The basis of digitalization in this period in the business was carried out to provide health measures. The indication that very serious health measures were taken for the COVID-19 pandemic was reflected in the manager’s views:

- ... Food and beverage menus have completely gone digital ... Contactless transactions have been started in QR code and payment systems ... (P2)
- ... First of all, QR codes were used in the menus. Thanks to the HES code application, thermometer and sensors at the entrance and exit, we can provide entrance controls ... (P4)
- ... In this period when human contact has already decreased with the pandemic, face reading systems (formerly there was card reading) took their place as a business. Barcode reading system has been used instead of paper menu for our a la carte restaurants ... The requirements of technology have also increased for the personnel. With the distance education system, information is provided on the HR department portal before our personnel starts to work ... (P13)
- ... We have enabled the transformation of technology, especially in areas where sanitation is required. We made technological changes to serve this based on minimum contact ... (P16)

The participants tried to adapt to the new conditions by making some changes within the scope of the new normal. While elements of the marketing mix are used to increase guest potential, loyalty programs have been introduced to encourage guests to travel. These features are discussed under the *Activities to Increase Guest* theme and the opinions of the managers on this theme are as follows:

- ... Various marketing activities aimed at the safety of our business were carried out through social media ... (P6)
- ... We showed that we will provide a healthy experience to our guests by highlighting non-contact and hygiene in the promotion of our business ... (P13)

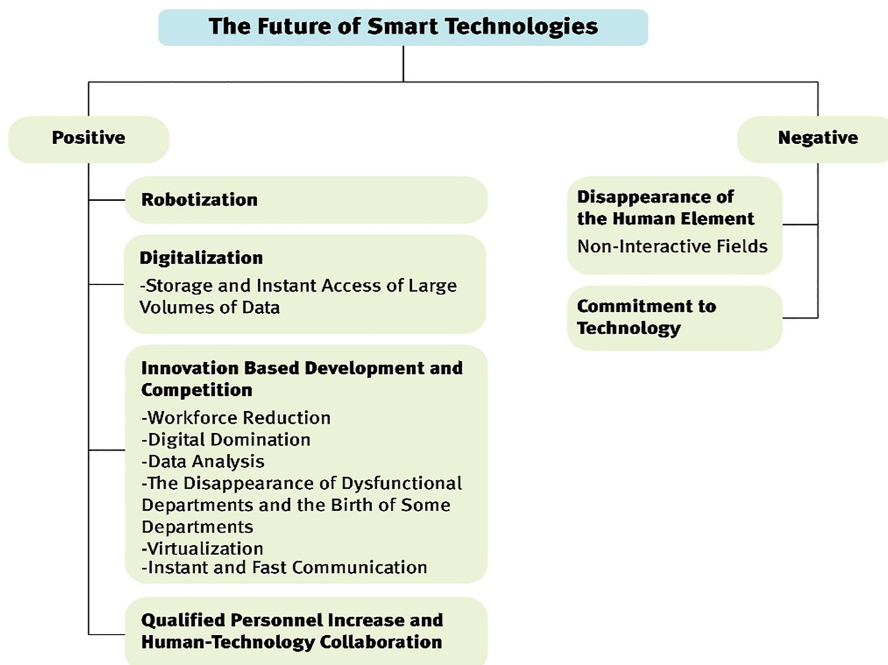
... We have a loyalty program. Guests can make reservations with the application and enter their own information into this application. In the integrated system, it is reflected in the hotel program and the hotel can access the guest's information. Guests can come to the hotel and check-in without contact, and enter their room without contact, including the elevator and room door. (The elevators are programmed to only go up to the guest's room with the codes sent to the guest.) E-check-in, which is used on airplanes, is also used in our hotel. Thanks to the application, the guest can use their phone as a room card ... (P15)

Managers' views on how smart technologies will shape a hotel business in the future are divided into themes as a result of content analysis. The themes are divided into two main groups, positive and negative and presented in Figure 5.

Today, the number of robotic applications in hotel businesses is increasing day by day. For example, Starwood's Aloft Hotel uses a robotic butler for the convenience of hotel guests, Royal Caribbean's Quantum of the Seas uses robotic arms to bartenders at Bionic Bar (Tung and Law, 2017) and Henn Na Hotel uses robots to deliver guests' luggage to their rooms (Yallop and Seraphin, 2020). Managerial views show that developments in *Robotization* in the industry are followed closely:

... I think virtual reality and space technologies will enter this system soon, and of course we will catch this technology from somewhere. It will not be possible everywhere, but robots will be used more intensively in hospitality. In fact, both human and robotization will go in an integrated way ... (P3)

... I am aware that the scope of smart technologies in the service sector will expand even more in a short time. The uncontrollable increase in personnel costs will bring about this inevitable end.



Note(s): Kappa = 0.93

Source(s): Author's own creation

Figure 5.
Future evolution of
smart technologies in a
hotel business

For this reason, smart technologies and especially the use of robots in the sector are closely followed in our business ... (P10)

The view of the manager, reflecting that the participants will store data and use this data for various purposes (such as offering customized products in case of repeat customer visits, tracking special days and small surprises for guests) will become much more important in the future, presented under the theme of *Digitalization* as follows:

... Guest information will be easier to store, and the information obtained will be used extensively for various purposes ... (P2)

Hotel businesses being open to innovation and development is a prerequisite for their existence in the future. Keeping abreast of today's changes and developments and ensuring business adaptation will support their survival in the competition. In this respect, the manager's views on the *Innovation based Development and Competition* theme are listed:

... Our expectation is that digitalization will be very important in the hotel. Each hotel and each group will have an application, for example, the location of the hotel, hotel map, spa reservation, golf reservation, sunbed reservation will be made in that application. I think that those who do not do this will be left behind ... (P4) ... Technology will dominate here, as everywhere else. Many applications will switch to smart technology and the basis of competition will be the ability to adapt quickly ... (P6)

Smart technologies facilitate the operation of businesses and add speed in all aspects. However, the intensive use of smart technologies will increase human and technology interaction and the need for qualified personnel will increase even more. Further, the majority of the participants argue that if smart technologies are supported by qualified personnel, it will be a more efficient system. These views are presented with a few examples in the *Qualified Personnel Increase and Human Technology Collaboration* theme:

... If we support technology with conscious, educated and qualified personnel, the business will take its desired place in the service sector ... (P4)

... People can make guests feel like family and technologies should be used to help improve this service ... (P16)

In the context of negativity, the *Disappearance of the Human Element*, and the themes of *Commitment to Technology* are handled. Participants think that only turning to smart technologies will eliminate the human-based nature of the industry. Also, viewpoints stating that the disappearance of the human element will mean that human emotions will also disappear:

... The need for labor will decrease and interaction will disappear ... (P10)

... Insincerity will turn into cold living spaces ... (P11)

Providing a unique and memorable experience is important to the service industry. The use of intensive smart technologies to provide a unique experience may cause guests to be exposed to technological devices excessively. In addition, excessive commitment to technology may bring some limitations along with a great financial burden for the business. Managerial view reflecting these:

... We will be overly dependent on technology at this rate, which is not encouraging for both guests and employees. There is also the cost of incorporating this technology into the business ... (P14)

In the context of smart technologies, manager opinions regarding business strategies for current employees were gathered under two themes after content analysis and shown in [Figure 6](#), while the opinions of businesses regarding their future employment expectations

were divided into two themes as a result of content analysis and the themes are presented in Figure 7.

Smart technologies can bring innovations for businesses and employees. Adapting and ensuring this is one of the duties of businesses. Participants perform these tasks in different ways. The training is given by experts in the field of in-house and out-of-house help businesses in this regard. The views of the managers on the *Training* theme, which includes these features:

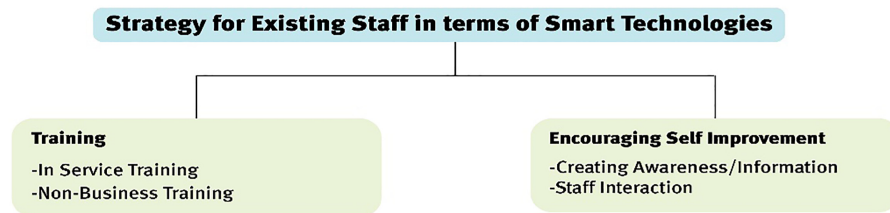
... There are strategic plans. Within these plans, the awareness of the personnel is ensured by taking both in-house and external trainings ... (P6)

... We are establishing the personnel structure as mixed (young-experienced), and we eliminate this problem with communication between employees. We also prioritize training ... (P11)

Managers not only want their employees to adopt their own organizational culture and identify themselves with the business, but also encourage them to develop themselves and live a quality life in their private lives. Following the technology closely and ensuring the development of employees will also increase the level of smart technology adaptation and use skills of the businesses. In addition, awareness raising/informing and interaction between personnel to increase the level of use of smart technologies within the enterprise are important factors that trigger personal development. In this respect, the manager's view on the theme of *Encouraging Self Improvement*:

... We want our employees to improve themselves in their social lives. Therefore, we support their participation in all kinds of training, fairs, and congresses they want ... (P5)

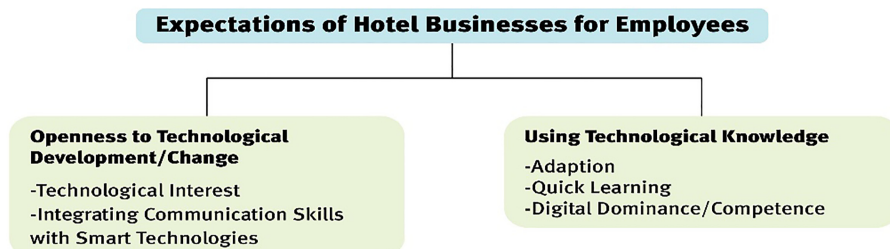
... Various trainings are given to increase the level of technological knowledge within the business. We also encourage our employees to participate in non-operational organizations to promote their



Note(s): Kappa = 0.97

Source(s): Author's own creation

Figure 6.
Strategy for existing
staff in terms of smart
technologies



Note(s): Kappa = 0.97

Source(s): Author's own creation

Figure 7.
Expectations of hotel
businesses for
employees

personal development. By emphasizing how important personal development is in terms of promotion, we select personnel with high level knowledge, especially in terms of smart technologies knowledge level ... (P6)

Technology is advancing day by day and it is necessary to adapt to this change every day. Because being close to innovation is synonymous with being outdated. Smart technologies force the tourism sector, which is labor and communication-intensive, to change. It is expected that there will be radical changes in the future with the digitalization of traditional face-to-face communication in the future. Managers consider the employment of personnel who can use their communication skills effectively on diverse platforms, considering the radical changes in the future. Managers' views supporting openness to technological changes are as follows under the theme of *Openness to Technological Development/Change*:

... All the reservation processes and part of our communication with the in-house guest are carried out through smart technologies. This form of communication takes place in a very different way from the traditional one. In the simplest way, positive effects on people are possible with close contacts, but this is not possible in front of the screen. Therefore, we will prioritize employing well-equipped personnel who integrate communication skills with smart technologies ... (P1)

... There are department-based criteria for personnel at the selection stage. However, the criterion in all departments is to be open to all kinds of developments ... (P13)

... Since the developments will affect all departments, the personnel we plan to employ in the future will definitely be able to use smart technologies; at least, care will be taken to ensure that there are people who are open to improvement ... (P15)

Learning and using technological knowledge is important today. Especially since employees who have just entered the sector are born into technology (Generation Z), they can adapt quickly to change. Thus, hotel businesses are considering employing younger staff and staff who are competent in digital information and can use it effectively, both today and in the future. The views on the *Using Technological Knowledge* theme, which includes these features, are as follows:

... There must be employees with digital competence in the future ... (P4)

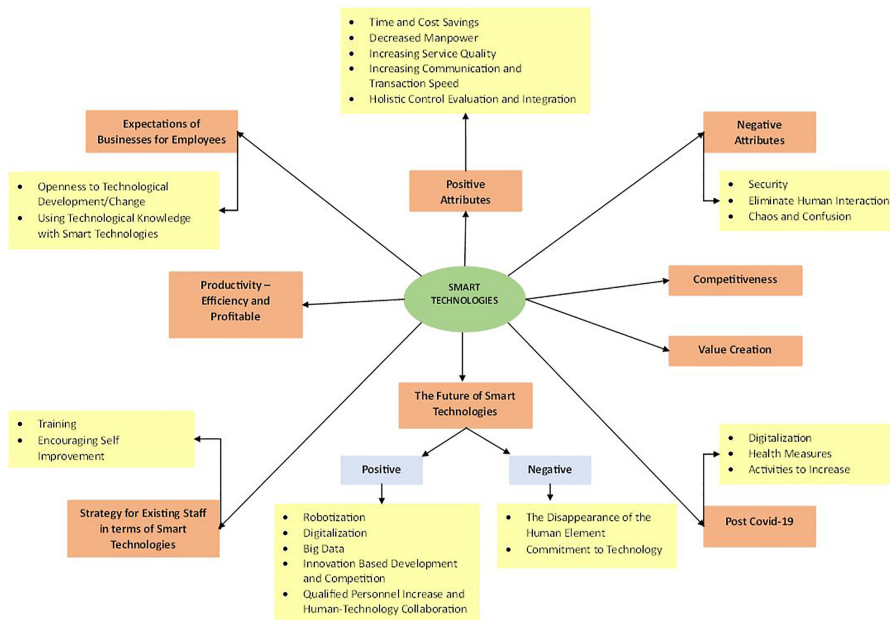
... New generations adapt much faster. Every integrated system is supported with trainings, and it is fully put into use ... (P10)

In conclusion, the themes, and aggregate dimensions that senior managers working in high-quality hotel businesses see as the key element-component for smart technologies can be summarized holistically as follows (see [Figure 8](#)):

6. Discussion and conclusion

Within the scope of this study, which is based on the hospitality industry, which is one of the sub-branches of the tourism industry, the perspectives of senior managers working in hotel businesses on the concept of smartness are discussed in the context of a wide range of subjects.

Content analysis was carried out on the manager's opinion on smart technologies, and then themes and aggregate dimensions were created. Using smart technologies pushes hotel businesses to be innovative and creative, and at the same time to differentiate from many competitors and be ahead of their competitors ([Buhalis and Leung, 2018](#)). This perspective reflects the basic philosophy of aggregate dimensions. The value that smart technologies will offer to a hotel business can be described as a triple pillar (see [Figure 1](#)). Although the level of importance of each pillar is unique, the lack of a pillar can cause the balance to deteriorate, thus jeopardizing the future of the hotel business. The basic philosophy of the aggregate



Source(s): Author's own creation

Figure 8.
A holistic display of the
perspectives of senior
managers working in a
top-quality hotel
business towards
smart technologies

dimension of productivity-efficiency and profitability is linked to finance, management and the functioning of the organization in harmony. The basic philosophy of creating value is to organize a system that will ensure that authentic products are presented in a fast, original and standard way for them to have unforgettable experiences by prioritizing guest-orientedness, and the guest returns satisfied. The philosophy of competitiveness emphasizes being able to compete with its competitors or to be a pioneer in competition by ensuring that the products offered are individualized in line with the wishes of the guests with the support of smart technologies. The intersection points of these three aggregate dimensions, in other words, the heart of the aggregate dimensions, is the themes of rapidity/quickness, managing/holistic assessment, standardization, harmony/integration-coordination and experience-memory. These themes reflect concepts or features that senior executives working in top-quality hotels consider vital to smart technologies. Being able to react quickly, accessing a holistic evaluation instantly and at any time, standardized products (Ivanov, 2019; Manthiou *et al.*, 2021), connection and harmony between smart technologies in the hotel and storage of all these are the keys to be found in a smart hotel element and can be described as the heart of the smart hotel. In support of this view, the study by Buhalis and Leung (2018) points out that through the interoperability and interconnectivity of smartness, hotel businesses contribute to improving their competitiveness by better understanding their customers and market conditions and improving their decision-making processes.

On the contrary, negative attributes were themed as laziness, reducing creativity-molding/shaping people, reduction of labor and routinization of work life. Standardization in service quality, especially through smart technologies, can cause physical and mental laziness or comfort on the staff, but also limit or shape people's creativity. Also, routinization in the work life of the employees may cause some negativities in terms of job satisfaction. The issue of the reduction of labor draws attention in many studies (Ivanov and Webster, 2019;

Huang and Rust, 2021; Samala *et al.*, 2022) as one of the most important discussion topics in the body of knowledge. There are two mainstream views in the studies. The first is the negative view that with the intensive use of smart technologies in the tourism industry, human labor will decrease in the industry and many people will lose jobs (Boyd and Holton, 2018; Zeng *et al.*, 2020), while the second is the positive view that many new jobs will be created thanks to smart technologies (Samala *et al.*, 2022; Tusseyadiah, 2020; Ivanov and Webster, 2019). A different view is that job loss in people due to smart technologies can help them transition from low-skilled jobs to high-skilled jobs (Zeng *et al.*, 2020; Tusseyadiah, 2020). The reason why the decrease in human labor is seen as negative within the scope of this study is that the statements made in the interviews with the managers clearly point to negativity.

Technologies used in smart hotels department-based themes in technological, organizational and environmental contexts, Stylos *et al.* (2021) were discussed in the study. Stylos *et al.* (2021), classified the technological context as associated with smart systems configurational innovation, the organizational context with smart hotel sustained learning and the environmental context with the aggregate dimensions of smart network synergism. *Food and Beverage-Culinary* departments are one of the departments where smart technologies are used most intensively. While mainly guest-oriented smart technologies are used, organizational compatibility, especially for hotel management and guest interaction and satisfaction, is the main focus of smart hotels. In this respect, the aggregate dimensions of smart systems configurational innovation (customized technical solutions) and smart systems configurational innovation (organizational compatibility) use smart technologies in technological and organizational contexts. Intelligent technologies are used intensively in *Purchasing and Sales* departments for organizational compliance and hotel guest and third-party interactions. In these departments, smart technologies are preferred for environmental (hotel-guest smart interaction and hotel-third party smart interaction) and organizational (organizational compatibility) contexts. *Front Office and Guest Relations* departments draw attention as the departments that use smart technologies most intensively. Providing personalized technical solutions and ensuring the harmony and adaptation of the organization has come to the fore. While technological (customized technical solutions) and organizational (organizational compatibility and adaptation) contexts are predominantly used in these departments, there is a guest-oriented technology usage philosophy in the environmental (hotel-guest smart interaction) context. In the housekeeping department, it is a priority to provide guest-specific solutions and to ensure the functioning of the department. In this respect, the technical (customized technical solutions) and organizational (organizational compatibility) contexts are at the forefront of the use of smart technology for this department. In the *Information Technology and Technical Services* departments, the priority is to ensure organizational functioning, to keep the private information of the guests and to ensure communication with the third parties, and the organizational context (organizational compatibility) is the main focus of this department.

The opinions of the managers on the effects of smart technologies on the hotel business were themed and divided into two groups positive and negative effects. Positive effects were discussed by managers in terms of time and cost savings in the business (Chen *et al.*, 2022; Belanche *et al.*, 2021), workforce reduction, improving service quality, speed in communication systems and operations and holistic evaluation and control. These themes can be discussed under the aggregate dimension of finance, management and technology. All these are benefits of the operation of a smart hotel business. However, the main function of a hotel business should be directed towards the benefits of providing personalized, unique and memorable experiences to guests, rather than the effectiveness and efficiency of operation. Buhalis *et al.* (2023) point out that by facilitating a more comprehensive understanding of customers' needs, smart accommodation can reduce wasted marketing/operational effort, increase customer satisfaction and thus increase profitability. In this regard, businesses

should prioritize the financial, managerial and technological benefits they will obtain through smart technologies as well as the benefits that provide timely, individualized options based on a real-time, in-depth understanding of guests' desires (Buhalis *et al.*, 2023). In terms of negative effects, cyber security is at the forefront as the complexity and chaos encountered due to the disappearance of human interaction and the inadequacy of technology usage levels of guests and employees, and an excessive commitment to technology. Hou *et al.* (2021) emphasize that people resist service robots because of the belief that they cannot consider their unique characteristics and needs. The disappearance of human interaction can lead to the disappearance of feelings and emotions, and therefore to the dissatisfaction of the guests. Through smart technologies, information about guests and various vital reports are stored in the database of hotel businesses. While technological integration provides many benefits, it also carries risks. In smart hospitality, there are concerns about how the private data of the guest obtained before, during and after the stay is used (O'Connor, 2007). To benefit from smartness, it is important for hotel business to provide the smart ecosystem with the rich data it needs to work (Goel *et al.*, 2022). In addition to the strict measures to be taken by the hotel business on security, the introduction of legal sanctions by the government is also vital for the future of the smart movement. Furthermore, in the tourist industry, online reviews are valuable knowledge-based assets both for tourists to make decisions and for businesses to see their potential (Hlee *et al.*, 2018). Negative comments made by third parties and competitors draw attention as an important component of the chaos and confusion theme.

Considering the strategies for the use of smart technologies, managers aim to provide holistic evaluation and ease of operation by integrating various tools or devices (IoT) to provide a top service experience. Based on this strategy, managers draw attention to mobile applications such as the most important smart technology. Mobile applications offer various advantages as they are speed, convenience, independence of distance, and time (Rashid *et al.*, 2020). While the widespread use of mobile apps in hotel businesses is a tool that increases the provision of fast and easy service for guests, it is substantial for businesses to respond quickly, to work in an integrated manner and to access various data quickly.

Hotel businesses have made significant changes in their operations in the COVID-19 business environment in order to ensure the health and safety of employees and guests and to increase the desire of guests for hotel businesses (Gössling *et al.*, 2021). In parallel with this view, managers have discussed the changes in their businesses due to the impact of COVID-19 in the context of health measures and marketing elements. Among the health measures, the most important code/sub-theme is digitalization. The basis of digitalization covers the activities carried out to take health measures and refers to digitalization focused on reducing human contact some of the health measures are activities carried out within the framework of compulsory (HES code) measures, while some are the preferences of the enterprises within the framework of ensuring guest safety (sensors, QR, etc.). Marketing elements relate to activities carried out to normalize poor conditions. In this context, the focus of the activities is the desire to recover from the lost market and economic conditions and to reach the past levels again.

The predictions of the managers for the future actually exemplify the situation we are exposed to today: the rapid technological development and the advantages/conveniences gained accordingly, and the fear/prejudice caused by the intense use of smart technologies and robots as a result of rapid technological development. In the context of positive features, an opinion has come to the fore that robotization will be widely used in the hotel environment, digitalization will become widespread and human-technology cooperation will develop, competition and developments based on innovation will accelerate and especially an increase in qualified personnel will be provided. Indeed Jabeen *et al.* (2022) also emphasize

that the development of automation and robot technology will offer a suitable alternative to human workers in tourism, in connection with reduced purchasing and maintenance costs. However, although the manager's views are considered in the context of positive features, the literature also emphasizes the negative aspects of the views that people have hesitations in the face of human-robot interaction and that the intensive use of technology causes a decrease in customer satisfaction (Buhalis *et al.*, 2023). In the context of negative features, the themes of the disappearance of the human element and commitment to technology are also related to this view. Excessive commitment to technology or the intense use of technology causes negative consequences for technostress and personal well-being and productivity of technostress (Mirbabaie *et al.*, 2022), on the other hand, the fact that guests spend a technology-oriented holiday during their holidays in order to relax, renew and reduce the stress caused by the daily routine may cause the negativities on them not to be eliminated or alleviated. In this respect, the concept of digital detox draws attention to counter the consequences of the negativities caused by the intensive use of technology stated by the managers.

Although development in smart technologies can increase efficiency and productivity, they are often not comparable to human workers in terms of emotional involvement, communication, adaptability and intimacy (Stoyanova-Bozhkova *et al.*, 2020). However, the more widespread adoption and spread of smart technologies in businesses today and in the near future can also result in challenges for employees. Indeed, Okumus *et al.* (2017) underline that employees in hotel businesses generally do not have the skills to work with high-tech software and devices. From this perspective, there are several key elements to overcoming these challenges: openness to technological development/change and using technological knowledge. In this respect, openness to innovation and development and the ability to use technological knowledge are among the important qualifications to be sought in the personnel to be employed in future hotel businesses. In terms of existing employees, giving importance to personal development and training can be considered proactive behavior against bad situations that may occur in the future.

6.1 Theoretical implications

Considering that the study focuses on revealing the internal perspectives of managers on smart technologies, and there is limited work on managers (Stylos *et al.*, 2021) and smart business (Ballina, 2022) in the extant literature, it is thought that this study will shed light on some important contributions from a theoretical perspective. First, the research was carried out on senior managers in hotel businesses in the context of smart business, and it was tried to contribute to fill the current gap in the literature by presenting the managers' internal perspectives on smart technologies. Second, by dividing the positive-negative attributes of the managers towards smart technologies into themes, especially by associating the positive qualities with the aggregate dimensions, which aspect-dimension of smart technologies is of key importance for managers is presented holistically. Also, the junction points of aggregate dimensions or the heart of smart technologies consist of the themes of rapidity/quickness, managing/holistic assessment, standardization, harmony/integration-coordination and experience-memory, and these themes come to the fore as the key elements in a smart hotel business. Third, for the diffusion of smart technologies in a hotel business, Stylos *et al.* (2021), smart technology use and adaptation capacities of high-end hotel businesses in Antalya destination have been revealed. Thus, source for ecosystems in Antalya contexts were presented. Within the scope of the study, while smart technologies are preferred intensively in the organizational context, technologies for environmental and technological contexts tend to be used relatively less in a high-quality hotel business. Fourth, the effects of smart technologies on hotel businesses are classified

as positive and negative features, and the positive effects are associated with the finance, management and technology aggregate dimensions to facilitate the operation of a smart hotel business, while the negative effects are presented as the vital themes of cyber security, unmanned environment and smart technologies, which increase even more with the spread of the use of smart technologies. Fifth, rich predictions about how smart technologies will be shaped the hotel business in the future are presented, and the post-COVID-19 changes and business strategies are presented holistically and comprehensively. Lastly, it has been tried to define the strategies of the managers for the current personnel in the context of smart technologies, and which features are important in the personnel to be employed in the future.

6.2 Practical implications

The results of the study offer several important contributions to practitioners. First, revealing in a comprehensive and holistic manner which key elements are prioritized or given importance by the senior managers working in high-quality hotels in their internal perceptions of smart technologies can be a roadmap for senior hotel managers working in different hotels in terms of planning and strategy formation. Second, while managers characterize smart technologies with positive features as the key element that ensures the healthy and agile operation of business operations, creates value for guests and supports competitiveness, in terms of negative features, managers associate smart technologies with negative features such as pushing people into laziness, reducing creativity and putting them into certain patterns, causing them to become ordinary/routinized in the business environment and causing the disappearance of human labor. Third, [Stylos *et al.* \(2021\)](#), the smart hotel business is divided into three main pillars technological, organizational and environmental contexts, and in this study, the technology adoption of hotels is evaluated based on these three aggregate dimensions. In this context, when a smart hotel business is considered in general, it is a priority area to realize the organizational context, namely smart hotel sustained learning, organizational harmony and adaptation through smart technologies. This is followed by the environmental context, namely smart network synergy, technologies and technological context for hotel-guest interaction, smart system configurational innovation and personalized technology solutions. Fourth, in the context of the positive features of smart hospitality, the aggregate dimensions of management, marketing and finance overlap with consumer centricity, marketing-driving hospitality and operation agility, which [Buhalis *et al.* \(2023\)](#) stated as the drivers of smart hospitality. The main function of these three drivers is to create value for hospitality stakeholders, and the themes and aggregate dimensions determined within the scope of managerial views are in line with this view. Negative features are similar to the themes related to operational agility and consumer centrality, which are the drivers of smart hospitality, digital security and operational disruption, and the loss of the human element from the working environment. Fifth, whereas the essence of priority strategies of hotel businesses in the context of smart technologies is integrating mobile apps and digital innovations to increase service quality, the strategies for the adoption of big data, metaverse and cryptocurrency payment systems, which will be used intensively in the future, are a little more in the background. Sixth, during the COVID-19 period, hotel businesses have made changes to keep the organization alive or return to its old-normal levels by implementing noticeable innovations in their operations for employees, guests and suppliers through smart technologies. Seventh, in the context of foresight for the future, managers emphasize the positive views on the rapid development of innovation-based development, digitalization and robotics, as well as the increase in human and technology cooperation, and they point out that as a result of these developments, excessive use of technology and the

disappearance of people from the working environment will occur. Finally, the fact that smart technologies provide significant advantages in productivity, efficiency, and profitability does not prevent employees from coming to the fore in matters such as communication and intimacy and increases their importance. In this respect, while managers shed light on the need for employees to focus on self-development and training strategies in order not to lose their current jobs, they underline that being open to technological innovation and the ability to use technology will be key features in terms of employment in the future.

6.3 Limitations and future research

The focus of qualitative studies is to reveal the inner worlds of the people involved by examining a situation, case, or phenomenon in depth. In the present study, the fact that the qualitative research method is preferred and that it is also an exploratory study means that the results cannot be generalized. The study focused only on five-star hotels and senior managers in Antalya. The study can be extended contextually, to upper-middle-level managers and four- to five-star hotels. The study can be extended contextually, in terms of top and middle managers and four-five-star hotels, and can also be carried out with mixed, qualitative and quantitative methods. Further, most of the studies on ST in the literature are about smart destinations and tourists. Studies in the context of smart business are scarce (Ballina, 2022). In this context, unlike the hospitality industry, which is the main focus of this study, it can be carried out on businesses in other sectors that make up the tourism industry such as food and beverage, transportation, or entertainment-leisure industry. Moreover, among the important findings of the study, the key elements described as the heart of smart technologies and Stylos *et al.* (2021), the classification of smart technologies can be carried out with similar comprehensive studies or quantitative studies.

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