

# A SYSTEMATIC REVIEW ON STRUCTURE OF HOTEL SAFETY AND SECURITY SERVICE: DIMENSIONS AND MEASURES

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## ABSTRACT

*Safety and security services provided by hotels are grabbing guests' attention due to uncertainties like the COVID-19 pandemic, crime incidents, terrorist attacks, fire incidents, and technological innovations. Through a systematic literature review, this article aims to understand the structure of hotel safety and security (HSS) services for extracting its dimensions. This review consists of research articles published in the last 30 years, i.e., from 1994 to 2023. Articles were searched on Google Scholar with various keywords. A total of 73 no. articles were included in the study based on the PRISMA 2020 statement. Further, these articles were divided into categories according to the safety and security theme discussed in the research, which led to the synthesis of seven dimensions: 1. safety and security infrastructure, 2. Natural disaster and crisis preparedness, 3. Fire safety, 4. Crime and terrorism management, 5. Health and hygiene 6. Innovative technology, 7. Information security. The study adds to the literature by mapping the research studies under various dimensions to understand hotel safety and security structure and identify gaps for future studies. An extensive list of variables under different safety and security dimensions will benefit researchers and academia.*

**Keywords:** Hotel, Safety and Security, Dimensions, Fire Safety, Crime, Terrorism.

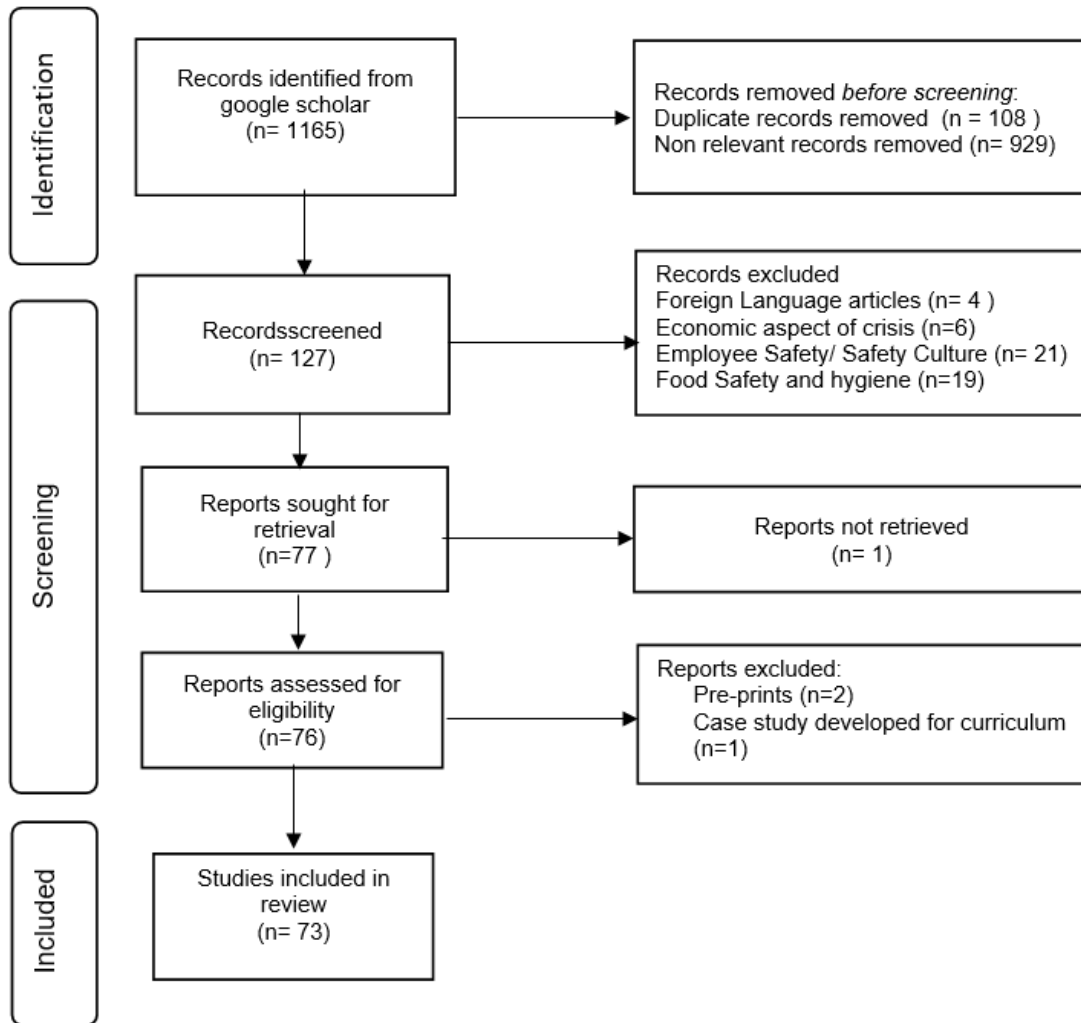
## INTRODUCTION

Globally, the hotel market is towards exponential growth, with a forecast to reach a revenue of US\$483.40bn and hotel users to amount to 1.33bn by 2027 (Statista, 2023). However, hotels must cope with multiple challenges to satisfy their guests' needs and wants. One such challenge is to ensure a safe and secure stay for their guests. Increased safety and security-related incidents in hotels and allied sectors have shifted guest attention toward safety and security measures being taken by hotels. Safety and security issues can influence the hotel's selection and revenue. Safety and security incidents faced by hotels are vivid. Some examples of such incidents are terror attacks, e.g., the JW Marriott bombing in Jakarta, Indonesia, in 2003; Taj and Oberoi hotel attacks in Mumbai, India, in 2008 (Paraskevas, 2013); crimes, e.g., murder, robbery, burglary, auto burglary, theft, auto theft, etc. (Leung et al., 2018), disasters events e.g. the 2001 United Kingdom Foot and Mouth Disease outbreak, the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic. The COVID-19 pandemic is a recent example of hygiene safety issues that made it difficult for hotel managers to achieve breakeven and keep staff employed.

The importance of this review is two-fold. It is the first systematic review article on hotel safety and security services. Another critical point is that this review classifies the literature on HSS services into dimensions and maps the existing studies available for specific dimensions. This classification will help researchers understand each dimension's present scenario and pursue further research. Therefore, the peculiar aim of this research is to find out the various dimensions of hotel safety and security services and enlist their variables.

## RESEARCH METHODOLOGY

This review includes research articles published in the last 30 years, from 1994 to 2023. The previous 30 years of articles clearly show how hotel safety and security services evolved with time. An article search was carried out on Google Scholar with the search keyword "hotel safety and security" in the title, excluding citations, and resulted in 13 no. articles. Insights of these articles provided keywords for further literature search. More literature was searched with keywords in title excluding citation - hotel disaster, hotel crisis, hotel emergency, hotel crime, hotel terror, hotel terrorist, hotel terrorism, hotel technology, hotel information security, hotel cyber security, hotel hygiene, hotel health, hotel COVID-19, hotel first aid and hotel fire. All the keywords resulted in a total of 1165 no. articles. Initially, 127 articles were selected after removing duplicates, non-relevant, and foreign language articles. To maintain the quality of the systematic review, articles from premier databases were included: Elsevier, Emerald Insight, Taylor and Francis, Sage, Springer, IOP Conference Series, and MDPI. At first, each article has been analyzed by authors individually for scope, methodology, data collection process, and analysis. Afterward, a group discussion was done to select articles to synthesize the results.



**FIGURE 1**  
**PRISMA 2020 FLOW DIAGRAM**

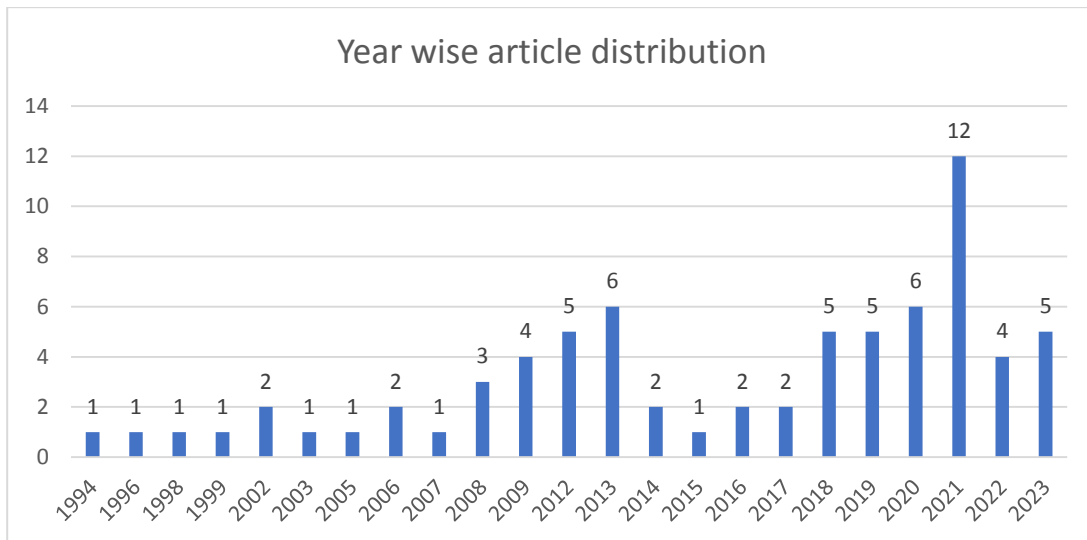
After examining each article according to the objective and scope of research, a total of 73 no. articles were selected for the review using the 2020 PRISMA Statement (figure 1). As this systematic review focuses on dimensions of safety and security services, articles related to employee safety, the organization's safety culture, food safety, food hygiene, and financial crisis management were omitted. The literature was divided into seven categories according to the specific theme of hotel safety and security discussed in the article, which are safety and security features and practices, fire safety, crime and terrorism, health and hygiene, disaster and crisis, information security, and innovative technology to understand the dimensions of hotel safety and security services.

### DESCRIPTIVE ANALYSIS OF INCLUDED STUDIES

The data includes 73 no. articles on hotel safety and security services from 1994 to 2023. These articles are published in Science Direct, Emerald Insight, Sage, Taylor & Francis, Springer, MDPI, and IOP Science.

## Year-wise Distribution of the Data

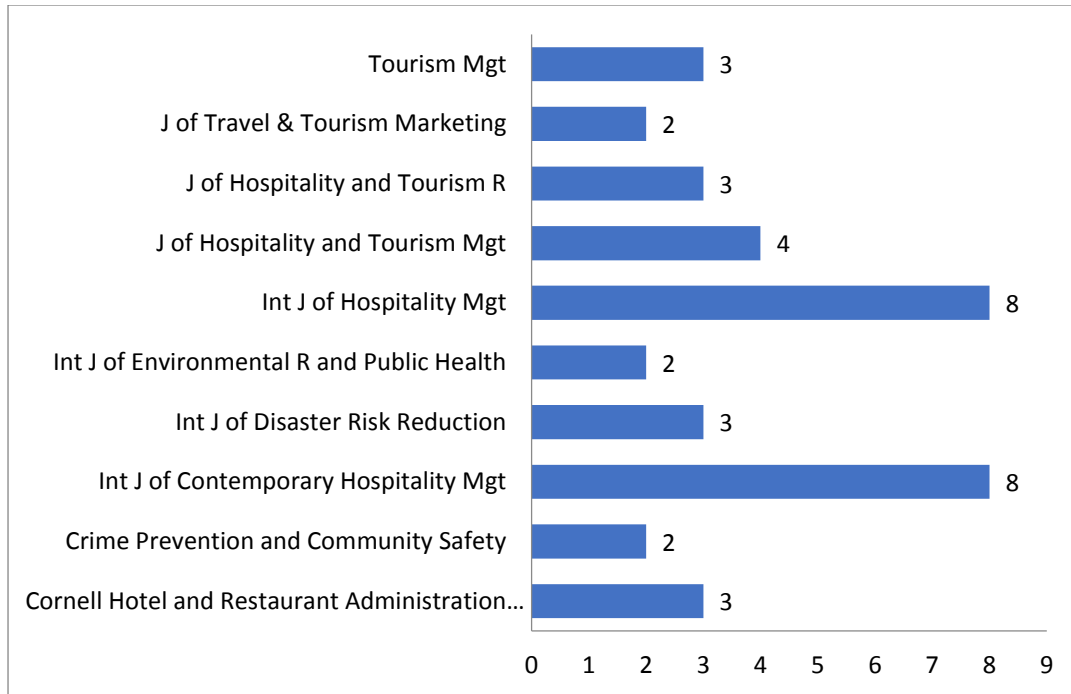
The research on hotel safety and security was almost stagnant till 2007, and then from 2008, it showed an increase till 2013. Out of 18 no. researches done from 2008 to 2013, 04 no. researches are on fire safety, 03 no. researches are on crime and terrorism and another 03 no. researches are investigating the sufficiency of safety and security measures for customers. This might be due to an increase in terror attacks on hotels worldwide. Again, the graph shows the highest no. of studies done in 2021, which is clearly due to the COVID-19 pandemic, as out of 12 no. studies, 08 no. studies are on COVID-19. Figure 2 shows that such issues affect hotel safety and security research.



**FIGURE 2**  
**YEAR-WISE DISTRIBUTION OF ARTICLES**

## Most Relevant Sources

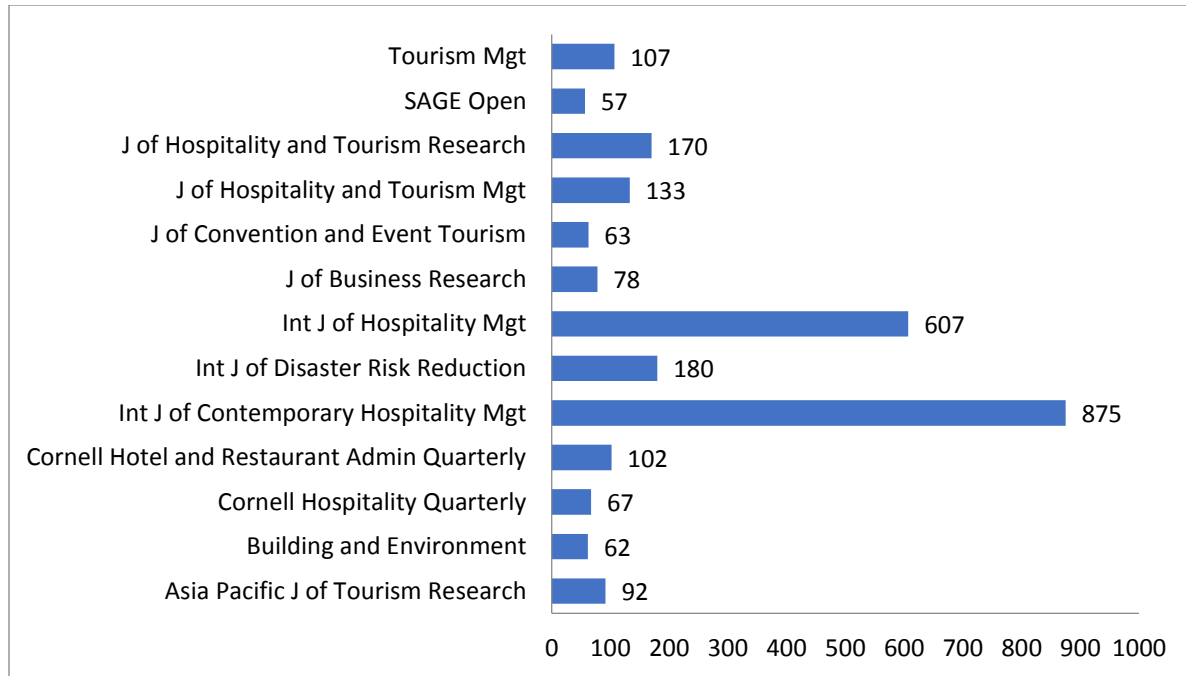
Figure 3 represents the most relevant sources regarding the number of articles published in the journal. International Journal of Contemporary Hospitality Management and International Journal of Hospitality Management has the highest number of articles published, followed by the Journal of Hospitality and Tourism Management.



**FIGURE 3**  
**MOST RELEVANT SOURCES**

### Most Cited Sources

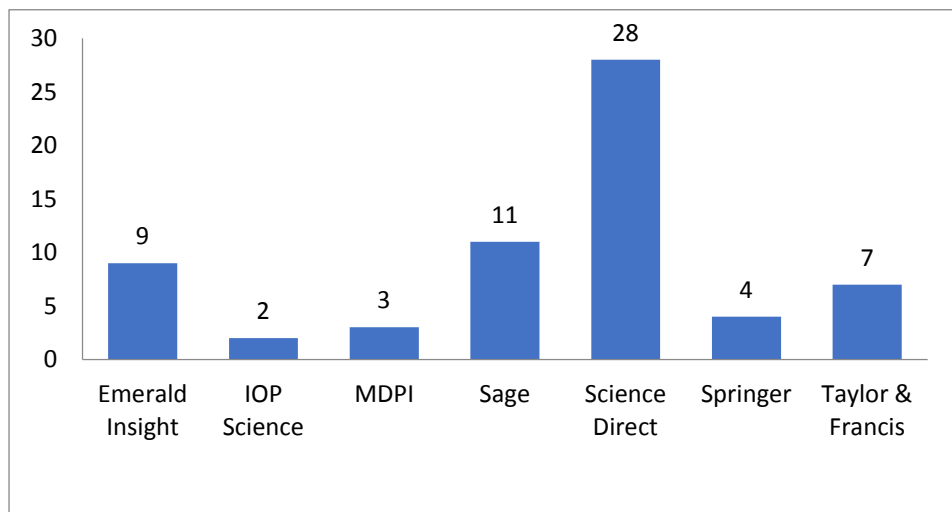
Figure 4 shows the most cited sources. International Journal of Contemporary Hospitality Management and International Journal of Hospitality Management are on top not only in the number of articles but also in the number of citations. The number of citations shows that the articles published in these journals have novel concepts and a broad scope for future research. The high number of citations also represents that hotel safety security research is gaining more attention.



**FIGURE 4**  
**MOST CITED SOURCES**

**Most Influential Directories**

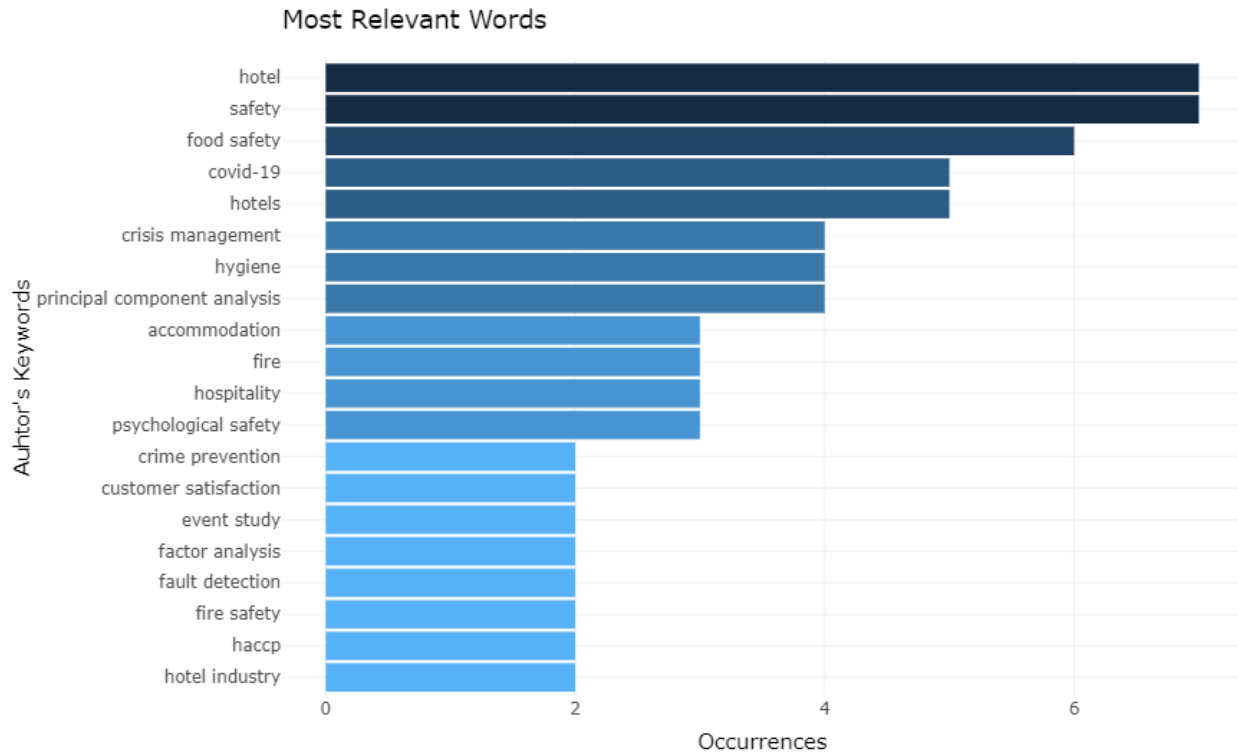
Figure 5 shows articles published in each database. Regarding the number of articles published on hotel safety and security, the most influential directory is Science Direct, with 28 no. articles followed by Sage, Emerald, and Taylor and Francis with 11 no., 09 no., and 07 no., articles respectively.



**FIGURE 5**  
**MOST INFLUENTIAL DIRECTORIES**

### Most Relevant Keywords

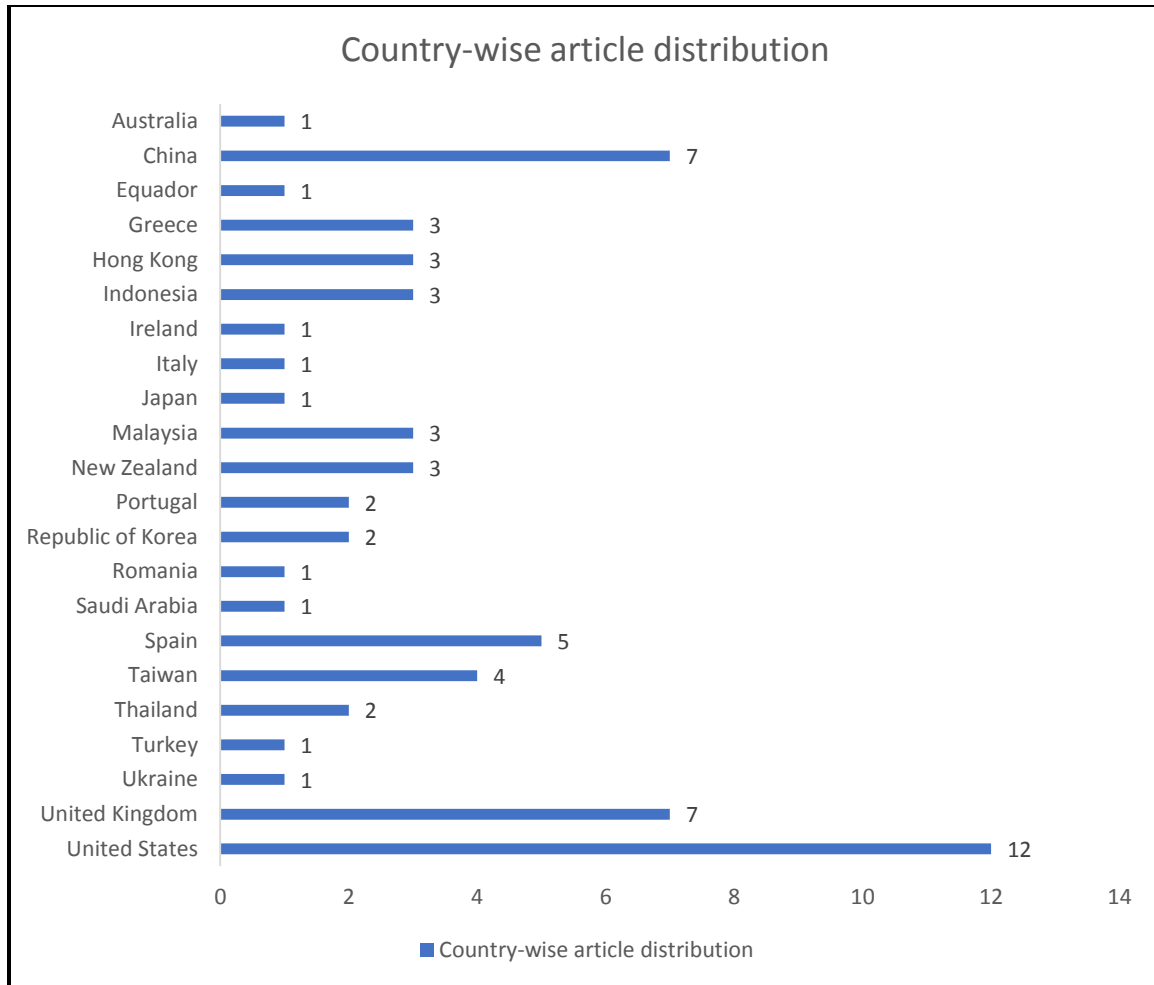
For this systematic review, we used various keywords to search articles. The keywords with the highest occurrence in hotel safety and security are hotel, safety, and food safety. Figure 6 shows the keyword trend in hotel safety security from 1994 to 2023, and the researchers are more inclined toward fire safety, crisis management, crime prevention, and COVID-19 due to the pandemic.



**FIGURE 6**  
**MOST RELEVANT KEYWORDS**

### Country-wise Article Distribution

Figure 7 shows the distribution of research articles as per country. The highest number of studies has been done in the United States, followed by China and the United Kingdom, and other countries have less focus on hotel safety and security research.

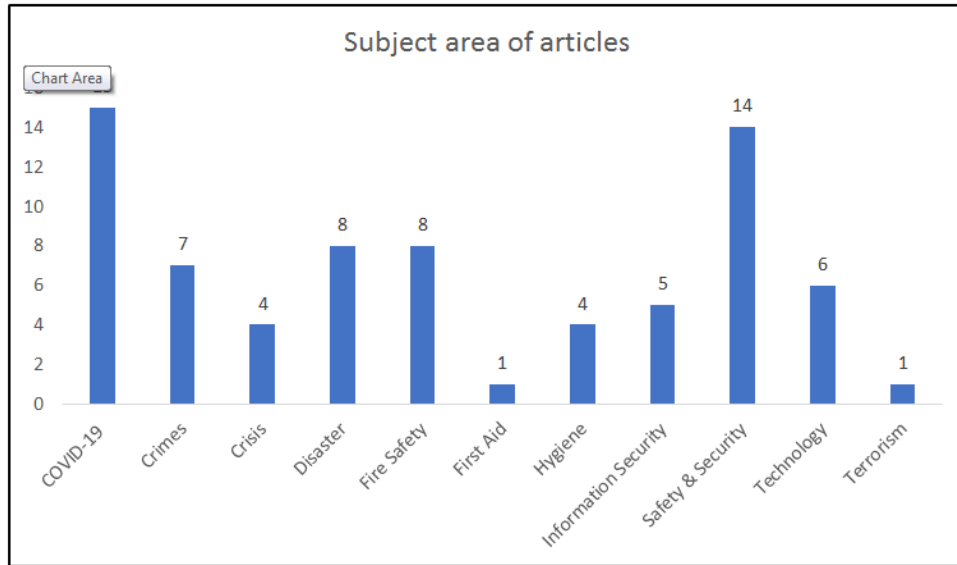


**FIGURE 7**  
**COUNTRY-WISE ARTICLE DISTRIBUTION**

### The Subject Area of the Articles

Figure 8 represents the subject area of hotel safety and security discussed in the articles. Overall safety and security, or a general perspective on hotel safety and security, is the most researched area. COVID-19 is the second most searched area, which is clearly due to the ongoing pandemic. Other well-explored areas are hotel crimes, disasters, and fire safety—the remaining areas with very little research present scope for further research.





**FIGURE 8**  
**SUBJECT AREA OF ARTICLES**

## Literature Classification and Synthesis

The discussion on dimensions of hotel safety and security services requires an understanding of the basic definition of safety & security and an overview of safety and security services in the hotels. Hence, the discussion starts with the definition of safety and security along with a brief on hotel safety and security services, followed by a classification of literature according to dimensions with synthesized results. After each dimension, a table of measures specific to that dimension has been given to better understand the structure of safety and security services.

## Defining Safety and Security

Understanding basic literature definitions is essential to discussing hotel safety and security. Safety and security are used interchangeably in tourism literature. Oxford Dictionary defines safety as "the state of being safe and protected from danger or harm" and security as "the activities involved in protecting a country, building or person against attack, danger, etc."

In the context of a hotel, safety is protecting employees and guests in the hotel from potential harm or death, and security involves not only protecting employees and guests but also safeguarding guest belongings and hotel building (Enz, 2003).

From the above definitions, it is evident that safety is about protecting human beings, and security is about safeguarding guests and hotel assets. According to other researchers, issues such as fire, accidents, natural calamities, and hazardous materials are related to safety, whereas issues such as theft, crime, and terrorism are security issues (Chan & Lam, 2013; Rittichainuwat & Chakraborty, 2012). Hence, safety and security are related to protecting guests, employees, and the hotel property. This review article focuses on safety and security services being provided to the guests. Therefore, the employee-centric safety culture of the organization has not been included in the discussion.

## Hotel Safety and Security (Hss) Services

Hotels must incorporate all necessary safety and security measures, as guest safety and security on the premises is the hotel's responsibility (Shortt & Ruys, 1994). Understanding tourists' viewpoint of HSS measures is crucial as it shapes the safety and security measures of hotels, airlines, and other tourist destinations (Rittichainuwat & Chakraborty, 2012). Research shows a gap between the perception of hotel security managers and guests for safety and security (Chan & Lam, 2013). Tourists' viewpoint on HSS is affected by multiple factors. A business tourist might have a different view of the HSS measures of a destination when he travels with his family (Rittichainuwat & Chakraborty, 2012). Tourists expect a clean room at a reasonable price. However, when travelling overseas, they are ready to compromise on a cleanroom over increased security. Tourists' perception of HSS is different according to the level of classification of hotels and generation also (Anichiti et al., 2021). Women are more willing to pay extra for a room for their preferred safety features than men. Also, as customers' ages increase, their willingness to pay more for security features decreases. Understanding these factors that shape the guest perception of HSS is essential, as safety and security are among the hotel selection factors (Hilliard & Baloglu, 2008).

## Identifying Hss Services Dimensions

This systematic literature review on HSS services provides information on safety and security issues and challenges hotels face. In the literature, authors have presented guest perception, employee perception, one or many safety and security issues, challenges, and management strategies. These issues and strategies helped synthesize the dimensions that cover all issues and challenges of safety and security services for the hotel. The literature synthesis resulted in seven dimensions presented in Table 1. This systematic review doesn't give any particular emphasis on luxury hotels as these services are needed in all categories of hotels. Even with a minimum budget, the hotels can incorporate some essential services.

<b>Category</b>	<b>Source</b>
<b>Safety and security infrastructure</b>	(Hilliard & Baloglu, 2008; Rushmore & Malone, 1998)
<b>Natural disaster and crisis preparedness</b>	(Brown et al., 2018; Lo et al., 2006; D. N. Nguyen et al., 2018)
<b>Fire safety</b>	(Ying Yueh Chen et al., 2012; Hassanain, 2009)
<b>Crime and terrorism management</b>	(Bach & Pizam, 1996; Enz, 2003; Leung et al., 2018; Paraskevas, 2013)
<b>Health and hygiene</b>	(Anichiti et al., 2021; Bonfanti et al., 2021; Emir & Kuş, 2015; Garrido-Moreno et al., 2021; Lo et al., 2006; López et al., 2021; Pavlatos et al., 2020)
<b>Innovative Technology</b>	(Bonfanti et al., 2021; Goh & Law, 2007; J. S. Kim et al., 2008; J. S. Kim & Bernhard, 2014; Lee et al., 2021; Lim et al., 2018; Shen et al., 2020; Shin & Kang, 2020; H. J. Wang & Wu, 2020)
<b>Information Security</b>	(H. B. Kim et al., 2013; J. S. Kim et al., 2013)

### **Safety and Security Infrastructure**

The safety and security infrastructure present in hotels has evolved over the decades. Earlier hotels did not even have room keys, so security was weak. Hotels started using locks with keys to safeguard private rooms not before 1829 C. E. These traditional metal keys have been phased out, and security has become very strong with electronic room locking systems (Rushmore & Malone, 1998). Lighting is also vital in making hotel areas safe for guests and employees. Guests also consider the lighting in terms of bright hallways and well-illuminated emergency exits when selecting a hotel (Hilliard & Baloglu, 2008).

While using safety and security measures and procedures, it is essential to balance overt safety measures and hospitality towards guests, as an excess of safety measures may force the guest to think that some safety & security-related incident had occurred earlier. However, these overt safety measures make the guests feel comfortable in the hotel right after terrorist attacks. Table 2 represents essential safety and security infrastructure variables discussed in various research studies.

Uniformed security staff (Anichiti et al., 2021; Bach & Pizam, 1996; Chan & Lam, 2013; Hilliard & Baloglu, 2008; Shortt & Ruys, 1994)	CCTV (Anichiti et al., 2021; Bach & Pizam, 1996; Chan & Lam, 2013; Hilliard & Baloglu, 2008; Leung et al., 2018; Paraskevas, 2013; Rittichainuwat & Chakraborty, 2012; Shortt & Ruys, 1994)
Non-uniformed security (Anichiti et al., 2021; Chan & Lam, 2013)	Lifeguard on the beach (Anichiti et al., 2021; Rittichainuwat & Chakraborty, 2012)
Armed security guards (Shortt & Ruys, 1994)	Security boat surveillance on the beach (low noise)

<p>Doorman (Leung et al., 2018)</p> <p>Security personnel with foreign language skills (Anichiti et al., 2021)</p> <p>Staff knowledgeable about safety/ security procedures (Anichiti et al., 2021)</p> <p>Security staff patrolling (Anichiti et al., 2021; Bach &amp; Pizam, 1996; Leung et al., 2018; Paraskevas, 2013; Shortt &amp; Ruys, 1994)</p> <p>Safety and security training of staff (Chan &amp; Lam, 2013; Shortt &amp; Ruys, 1994)</p> <p>Background check of staff (Chan &amp; Lam, 2013)</p> <p>Hotel ID and nametag on duty (Chan &amp; Lam, 2013)</p> <p>Key issue procedure for employees (Chan &amp; Lam, 2013)</p> <p>Dedicated female-only guest floor (Chan &amp; Lam, 2013)</p> <p>Private automatic branch exchange systems (PABX) (Chan &amp; Lam, 2013)</p>	<p>pollution engines) (Anichiti et al., 2021)</p> <p>Lifeguards on the pool (Anichiti et al., 2021)</p> <p>Secured fence and non-slip around the swimming pool (Anichiti et al., 2021)</p> <p>Safety signs on pools &amp; beaches that children should be supervised by an adult (Anichiti et al., 2021)</p> <p>An independent security risk assessment by an outside security consultant or government (Chan &amp; Lam, 2013)</p> <p>Written security plans (Hilliard &amp; Baloglu, 2008)</p> <p>Safety videos playing on in-room guest television (Hilliard &amp; Baloglu, 2008)</p> <p>Parking facility connected to hotel building (Hilliard &amp; Baloglu, 2008)</p> <p>Frequent hotel safety inspection by your tour operators (Rittichainuwat &amp; Chakraborty, 2012)</p>
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### Natural Disaster and Crisis Preparedness

Many scholars have studied disasters and crises in the context of the tourism industry (Albattat & Som, 2015; Lo et al., 2006; D. N. Nguyen et al., 2018).

Chain hotel properties have a complete crisis management plan when planning for crises and disasters. It is a cause of concern that privately owned hotels either do not have a crisis management concept or use minimum techniques. To survive during a crisis, hotels have to cut down on unnecessary expenses (Lo et al., 2006). Hotels need to remember that the most critical factor in implementing crisis planning is serving customers, and expenses should not be cut on the cost of service quality. It is not the extent of the crisis that hampers the hotel's image but how it acts during a crisis. Consumers have a positive image of the hotel in crisis if they are made to think that the hotel is socially responsible. Guests are willing to return to the same hotel post-crisis.

Hotels are prone to many natural disasters, and not all tourists know the risks (D. N. Nguyen et al., 2018). Thus, hotels have an essential role in boosting the immunity towards disaster resilience by establishing official evacuation buildings, a center for refuge after a disaster, providing information related to the disaster in multiple languages, and proper training of employees for these disaster situations (D. N. Nguyen et al., 2018). Disaster resilience is essential for the hotel industry. It requires hotels and other related organizations to assess, innovate, adapt, and find a cure for the situations that arise from disasters. Brown proposed a disaster resilience framework for the hotel sector (DRFH) regarding various capitals. These capitals are economic capital, social capital, human capital, physical capital, natural capital, and cultural capital. This is a new way to assess disaster resilience for hotels in which capitals are broken down into predictor factors that are used to determine the disaster resilience of hotels (Brown et al., 2018). The framework has been used in studies to check the disaster resilience of hotels and has been a successful tool in giving a clear picture of hotels' resilience to disasters in the form of various capitals. Important various factors for natural disaster preparedness are shown in Table 3.

**Table 3**  
**NATURAL DISASTER AND CRISIS PREPAREDNESS MEASURES**

Staff training for crises and disasters (Brown et al., 2018; Hilliard & Baloglu, 2008; D. Nguyen et al., 2018; Rittichainuwat & Chakraborty, 2012)	Tsunami warning system on beaches (Rittichainuwat & Chakraborty, 2012)
Emergency exercises for disasters (Brown et al., 2018; D. Nguyen et al., 2018)	Early warning systems for disaster (Brown et al., 2018)
Exercises for disaster response, including collaborations with local emergency management organizations (Brown et al., 2018; D. Nguyen et al., 2018)	Manual procedures (Brown et al., 2018)
Participation in training opportunities (Brown et al., 2018)	"How to Survive a Disaster" manual in the guest room (D. Nguyen et al., 2018; Rittichainuwat & Chakraborty, 2012)
On-the-job exposure to emergencies (Brown et al., 2018)	Hotels volunteering to function as evacuation buildings and refuges (D. Nguyen et al., 2018)
For disaster, announce evacuation in major languages (Rittichainuwat & Chakraborty, 2012)	Knowledge of hotel systems (Brown et al., 2018)
Crisis management plan of service providers (Brown et al., 2018; Chan & Lam, 2013; Rittichainuwat & Chakraborty, 2012)	Strong leadership (Brown et al., 2018)
	Redundant critical supplies (Brown et al., 2018)
	Life safety system (Brown et al., 2018)
	Emergency elevators (Ying Yueh Chen et al., 2012)

### Fire Safety

Researchers have emphasized in the past as well that HSS measures are not enough to deal with all the emergencies like fires, and fire safety systems have been criteria for the selection of hotels (Hilliard & Baloglu, 2008).

Hotels are high-risk buildings for fire due to high occupancy, which makes evacuation time longer, high amount of combustible substances present in all areas of the hotels like curtains, bedding, mattresses, upholstered furniture, etc., guests' unfamiliarity with the hotel building, presence of the high-risk regions like kitchens, diesel fuel storage, etc and location of rooms on higher floors (Hassanain, 2009). Other researchers highlighted dangerous or negligent human behavior as the primary cause of the fire (Ying Yueh Chen et al., 2012). Human behavior should be incorporated into training and contingency planning by hotels as it is the primary cause of fire breakout (Ying Yueh Chen et al., 2012).

Routine inspections will be beneficial in identifying various issues with fire safety facilities, which can audit documents such as certificates of a compulsory maintenance contract or technical issues like no smoke detectors, no fire alarms, or difficult-to-reach extinguishers and hydrants. Chen proposes three strategies to evaluate fire safety and security measures and categorizes hotels as safe, at-risk, or dangerous. The three strategies are fire prevention, evacuation & mitigation, and fire control & resistance. These strategies can help owners self-evaluate the fire risk in their hotel buildings (Y.Y. Chen et al., 2012). Hassanain has developed a qualitative fire risk assessment tool, a checklist on which the condition of hotel facilities can be evaluated to identify fire hazards. The main attributes listed in the fire safety risk assessment tools are exits, fire protection systems, electrical systems, fire doors, hazardous materials, housekeeping practices, and other miscellaneous articles like staff training, emergency plans, etc (Hassanain, 2009). This checklist can undoubtedly be helpful for hotels to assess themselves for fire safety systems. Hotel fire safety measures are shown in Table 4.

**Table 4**  
**FIRE SAFETY MEASURES**

Well-equipped fire prevention systems (Chan & Lam, 2013)	Fire door (Ying Yueh Chen et al., 2012; Hassanain, 2009)
Evacuation plan for fire (Chan & Lam, 2013)	Sprinklers (Anichiti et al., 2021; Ying Yueh Chen et al., 2012; Hassanain, 2009; Hilliard & Baloglu, 2008)
Smoke detectors (Anichiti et al., 2021; Ying Yueh Chen et al., 2012; Hassanain, 2009; Hilliard & Baloglu, 2008)	Smoke exhaust equipment (Ying Yueh Chen et al., 2012)
CO monitor (Anichiti et al., 2021)	Smoke barrier (Hassanain, 2009)
Fire extinguishers (Anichiti et al., 2021; Ying Yueh Chen et al., 2012; Hassanain, 2009)	Fire emergency procedure training (Ying Yueh Chen et al., 2012; Hassanain, 2009)
Fire hydrants (Ying Yueh Chen et al., 2012; Hassanain, 2009)	Fire exit route map (Hassanain, 2009)
Fire dampers (Anichiti et al., 2021)	Escape sling (Ying Yueh Chen et al., 2012)
Fire alarms (Anichiti et al., 2021; Ying Yueh Chen et al., 2012; Hassanain, 2009)	Peripheral alleys (Ying Yueh Chen et al., 2012)
Pressurized stairways (Chan & Lam, 2013)	Evacuation devices (Ying Yueh Chen et al., 2012)
Rescue space (Ying Yueh Chen et al., 2012)	Audible and visible emergency alarms in multiple languages (Anichiti et al., 2021; Hilliard & Baloglu, 2008)
Horizontal fire compartment (Ying Yueh Chen et al., 2012)	emergency exit (Ying Yueh Chen et al., 2012; Hassanain, 2009)
Fire-resistant walls and roofs (Ying Yueh Chen et al., 2012)	Emergency exit Sign (Anichiti et al., 2021; Ying Yueh Chen et al., 2012; Hassanain, 2009; Hilliard & Baloglu, 2008)
Fire barriers (Ying Yueh Chen et al., 2012; Hassanain, 2009)	Emergency evacuation drill (Rittichainuwat & Chakraborty, 2012)

## Crimes and Terrorism Management

No hotel is immune to crime and terrorism (Paraskevas, 2013). The root cause of the range of crimes in a hotel is the intense focus on the customer and their demand for privacy. Hence, security managers must find ways to manage crimes without hindering guests' privacy. Many hoteliers feel that crime isn't a big problem for their business. However, research has found that violent and property crimes affect hotel operating performance. According to TripAdvisor reviews, almost equal crimes occur inside and outside the hotel (Leung et al., 2018). Hotels that do not have physical devices for security face more crime incidents than those that have physical devices for security, e.g., mechanical locks, electronic locks, in-room safes, front office safety deposit boxes, Monitored CCTV, and Portable communication devices used by security managers (Bach & Pizam, 1996).

Hotels upgrade their safety and security measures according to the changing environment. More changes in HSS measures of US hotels were observed in 2002 than in 2001 due to the 9/11 attack on the World Trade Center (Enz, 2003). The hotels that made significant changes in their safety and security measures in the US after the 9/11 terror attacks were the ones that already had extensive safety and security measures (Enz, 2003). That's why luxury-class hotels can moderate the effect of crime.

It isn't only the crime that impacts the hotel's operating performance but also the fear of crime. Fear of crime for hotel guests consists of three main factors - Nature of crime, information about crime, and physical environment (Leung et al., 2018). Major crimes hotel guests face are theft and burglary, which can be minimized by stringent security measures such as increasing the presence of safety and security staff and installing more CCTVs. Two-thirds of the hotel's crimes

take place in the parking lots. However, the crimes that take place in the hotel property and parking lots do not have any significant effect on operating performance. The possible cause is the effective and well-established safety security system and measures of hotels (Hua & Yang, 2017).

Paraskevas developed six-step baseline strategies to deal with terrorism in a hotel in accordance with the terrorist attack cycle. The baseline strategy includes the following parameters – 1. Detect; suspicious events, 2. Deject; make all safety measures visible; 3. Protect; devalue, delay, or deny, 4. Deflect; protection of employees' and guests' lives during the attack stage, 5. Connect: There should be clear communication and full connectivity with organizations' stakeholders. 6. Reflect; on why the organization can be targeted by terrorists and continuous training to deal with such emergencies (Paraskevas, 2013). These strategies can indeed be beneficial for hotels to deal with terrorism. Essential measures to make a hotel a challenging target for crime and terrorism are represented in Table 5.

Staff training on crime incidents (Bach & Pizam, 1996; Leung et al., 2018; Shortt & Ruys, 1994)	Security audits (Bach & Pizam, 1996; Chan & Lam, 2013)
Staff training on the terrorist attack (Paraskevas, 2013)	Membership in security association (Bach & Pizam, 1996)
Update training program (Paraskevas, 2013)	Remote trouble and alarm stations at all points of entry (Anichiti et al., 2021)
Drills on various terror attack scenarios (Paraskevas, 2013)	Trash management system for hidden harmful/explosive substances and unauthorized access to discarded paper records (Anichiti et al., 2021)
Evacuation drill for terror attack (Paraskevas, 2013)	Bulletproof windows in sensitive areas (Chan & Lam, 2013)
Informing guests about past crime incidents (Leung et al., 2018)	PA system with multi-language announcements for emergencies (Chan & Lam, 2013)
In-room safe (Anichiti et al., 2021; Bach & Pizam, 1996; Leung et al., 2018)	Receipt of up-to-date threat information from law enforcement/intelligence agents (Chan & Lam, 2013)
Front office safe deposit box (Anichiti et al., 2021; Bach & Pizam, 1996)	Hotels located in low-crime areas (Hilliard & Baloglu, 2008)
Proper lighting in the parking area (Bach & Pizam, 1996; Leung et al., 2018)	Millimeter wave scanners (Paraskevas, 2013)
Lost and found system (Leung et al., 2018)	Walk-in metal detector (Anichiti et al., 2021; Chan & Lam, 2013; Rittichainuwat & Chakraborty, 2012)
Reporting suspicious events (Paraskevas, 2013; Shortt & Ruys, 1994)	Metal detector (Anichiti et al., 2021; Rittichainuwat & Chakraborty, 2012)
Written reports of security incidents (Bach & Pizam, 1996)	X-ray machines (Anichiti et al., 2021; Chan & Lam, 2013; Paraskevas, 2013; Rittichainuwat & Chakraborty, 2012)
Surveillance team (Paraskevas, 2013)	Car checks with metal detector screening (Paraskevas, 2013; Rittichainuwat & Chakraborty, 2012)
High visibility of all measures (Paraskevas, 2013)	Emergency lighting/ Flashlight in guest rooms (Anichiti et al., 2021; Chan & Lam, 2013; Ying Yueh Chen et al., 2012) (Rittichainuwat & Chakraborty, 2012)
The unpredictability of security measures (Paraskevas, 2013)	Barriers and bollards (Anichiti et al., 2021; Bach & Pizam, 1996; Chan & Lam, 2013; Paraskevas, 2013)
Motorized operable walls, roll-down grilles, or deployable doors (Paraskevas, 2013)	Access to a public area with key (Leung et al., 2018)
Sniffer dogs (Chan & Lam, 2013; Paraskevas, 2013)	Access control programs for public, semi-public, controlled, and restricted areas (Anichiti et al., 2021; Paraskevas, 2013; Shortt & Ruys, 1994)
Shelter in place (if evacuation is not possible) (Paraskevas, 2013)	
Command center for an emergency (Paraskevas, 2013)	
Share property architectural plan with local authorities (Paraskevas, 2013)	
Security knowledge repository (Paraskevas, 2013)	
Portable communication devices for security staff (Bach & Pizam, 1996)	
Emergency power generators in blackouts (Anichiti et	

al., 2021; Chan & Lam, 2013; Hilliard & Baloglu, 2008; Rittichainuwat & Chakraborty, 2012) The emergency master key (Anichiti et al., 2021; Chan & Lam, 2013)	Visitor management system (Anichiti et al., 2021) Key-activated elevators (Anichiti et al., 2021; Chan & Lam, 2013) Emergency contact list for local authorities (Anichiti et al., 2021; Chan & Lam, 2013; Paraskevas, 2013) Contingency communication networks-satellite phones and pagers (Paraskevas, 2013)
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### Health and Hygiene

One of the positive outcomes of the SARS crisis was an increase in hygiene and sanitation (Lo et al., 2006). The virus can get transmitted from one hotel area to another by guests and housekeeping staff during cleaning. This can be prevented by guests' proper use of hand sanitizers, facial tissues, and disinfectant solutions by housekeeping staff during cleaning.

For the COVID-19 pandemic as well, researchers proposed strict hygiene maintenance to minimize the effect and spread (Bonfanti et al., 2021; Garrido-Moreno et al., 2021; López et al., 2021). Guest perception of hygiene influences hotel image, word of mouth, and revisit intentions and guest became highly cautious of hygiene practices of hotels due to COVID-19 and it became a significant service for guest satisfaction (Díaz-Pompa et al., 2023) Measures suggested for safeguarding customer health during COVID-19 are to adopt strict hygiene standards, emphasize social distancing by decreasing direct contact among staff and guests, use technology for social distancing and cleaning and hygiene surveillance team for compliance (Bonfanti et al., 2021; Garrido-Moreno et al., 2021; Pavlatos et al., 2020). Health and safety awareness is essential for employees' deep compliance with specific safety measures. Health safety standards need to be maintained as per the hotel star rating, as guests expect these standards to be in accordance with the hotel's star rating.

Providing first aid to customers comes as a moral duty for hotels. First aid might be required in case of accidents, heart attacks, injuries, etc (Emir & Kuş, 2015). For providing a safe environment to customers, apart from a doctor-on-call facility, a first aid kit in every room, a small clinic in the hotel, defibrillation units, a face mask for each guest for smoke or disease, and an ambulance are essential first aid services a hotel can provide (Anichiti et al., 2021). Table 6 shows measures the hotel took to manage guest health and hygiene, along with measures specially implemented for COVID-19.

<b>Table 6</b> <b>HEALTH AND HYGIENE MEASURES</b>	
First aid Training (Chan & Lam, 2013; Emir & Kuş, 2015; Hilliard & Baloglu, 2008; Paraskevas, 2013) CPR training (Hilliard & Baloglu, 2008; Paraskevas, 2013) Defibrillator (Anichiti et al., 2021; Hilliard & Baloglu, 2008; Paraskevas, 2013) First aid kit (Anichiti et al., 2021; Paraskevas, 2013; Rittichainuwat & Chakraborty, 2012) A doctor on call 24 h (Anichiti et al., 2021) A small clinic in the hotel (Anichiti et al., 2021) A pharmacy close to the hotel (Anichiti et al., 2021) An ambulance or bed ambulance carrier (Anichiti et al., 2021) Face mask for smoke/disease (Anichiti et al., 2021;	<b>Measures specifically for the COVID-19 pandemic</b> Temperature check (Garrido-Moreno et al., 2021; López et al., 2021) health checks health checks Hygiene of customer use spaces (Bonfanti et al., 2021; Garrido-Moreno et al., 2021) Personal hygiene of staff (Garrido-Moreno et al., 2021) Hygiene of workspaces (Bonfanti et al., 2021; López et al., 2021) Physical distancing (Bonfanti et al., 2021; López et al., 2021) Virus prevention kit (López et al., 2021) Disinfection with ozone (López et al., 2021) Creating the position "Head of Health Security"



<p>Bonfanti et al., 2021; Rittichainuwat &amp; Chakraborty, 2012)                  A thermometer to measure fever in each guest room (Rittichainuwat &amp; Chakraborty, 2012)                  Proper lighting of corridors and stairs to prevent injury (Anichiti et al., 2021; Shortt &amp; Ruys, 1994)                  Trash management system by preventing bad odors/diseases (Anichiti et al., 2021)</p>	<p>(Garrido-Moreno et al., 2021)                  Safety and hygiene staff training (Bonfanti et al., 2021; Garrido-Moreno et al., 2021; López et al., 2021)</p>
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**Innovative Technology**

One of the critical safety measures for enhanced customer experience during COVID-19 is investments in technology and digital innovations (Bonfanti et al., 2021). COVID-19 has made scope for the penetration of AI robotics in the hospitality industry. For clinical hygiene, hotels have options for robot receptionists, facial check-ins, voice guest control, and robot delivery services to minimize human-to-human contact. Guests are more accepting of cleaning robots and automated check-ins and check-outs after facing the COVID-19 crisis (Marques et al., 2022; Shin & Kang, 2020). Table 7 lists potential and already present technologically innovative measures in hotels.

<p align="center"><b>Table 7</b>  <b>INNOVATIVE TECHNOLOGY MEASURES</b></p>	
<p>ZigBee technology - hotel intelligent guidance system based (Shen et al., 2020)                  "cloak of invisibility" technology (Goh &amp; Law, 2007)                  Biometric Door Locks (J. S. Kim et al., 2008)                  Fingerprint system for door lock (J. S. Kim &amp; Bernhard, 2014)                  Unified hotel access control system (Lim et al., 2018)                  Robot assistants (Lee et al., 2021)                  Face recognition software (H. J. Wang &amp; Wu, 2020)                  Corridor voice monitoring (H. J. Wang &amp; Wu, 2020)                  Corridor portrait recognition equipment (H. J. Wang &amp; Wu, 2020)</p>	<p>Loitering detection software (Paraskevas, 2013)                  Door lock safety alarm system (H. J. Wang &amp; Wu, 2020)                  Visitor management system (H. J. Wang &amp; Wu, 2020)                  Cleaning robots (Shin &amp; Kang, 2020)                  Kiosk check-in (Shin &amp; Kang, 2020)                  Online check-in and check-out through mobile apps for minimum contact (Bonfanti et al., 2021; Garrido-Moreno et al., 2021; López et al., 2021; Pavlatos et al., 2020)                  Electrostatic sprayers and infrared technology for disinfection of surfaces (Pavlatos et al., 2020)                  Use of QR code for the menu on mobile (Bonfanti et al., 2021; López et al., 2021)</p>

Highlights of research suggesting the incorporation of various innovative technologies into hotels for enhancing safety and security:

1. Shen tested the handheld module given to the guest and the guidance module installed in the guestroom corridor. This intelligent guidance system guides the guest to the location of the guestroom when he is in the 2.8m range of the guidance module and takes a sensing time of 2-3 seconds. The guidance module will be able to guide the guest to the emergency exit in case of any emergency, which will also improve the safety and security function of the hotel (Shen et al., 2020).
2. Wang and Wu designed a hotel security system named RUNNING ANT which includes security facilities (face recognition equipment, corridor voice monitoring, intelligent, protective door lock, and hotel service app software) and security lines (face recognition registration, corridor voice monitoring, door lock pull alarm, visitor identification, identification of the number of people on the corridor). This system will improve psychological security and reduce crimes which can enhance the travel experience of single women travelers (H. J. Wang & Wu, 2020).
3. Lim studied a unified hotel access control system (UHACS), which has been accepted if it is valuable and easy to use (Lim et al., 2018).

4. Kim and Bernhard's study on fingerprint technology (FPT) finds that ease of use, convenience, and property security affect the usefulness of fingerprint technology (J. S. Kim & Bernhard, 2014).
5. Biometric door locks are more convenient and provide physical and data security (Kim, Brewer, & Barnhard, 2008).
6. Goh & Law suggested different ways the cloak of invisibility can be used for security purposes, including a cloak for armed security guards to make him disappear and cause no unpleasantness to the guest. Further, the technology could have implications for the privacy of VIPs and celebrities who don't want to be seen or come in contact with the public (Goh & Law, 2007).

**Guest Information Security**

Hotels take essential guest information, including credit cards, for registration and billing. Topmost credit card companies have formed the Payment Card Industry Standards Council, commonly called PCI, to ensure that firms accepting credit cards comply with strict information security measures. In case of failure, the business is responsible for all costs associated with improper use of credit cards (Kim et al., 2013; Kim et al., 2013). An information security breach harms guests' perception of service quality. It also affects their level of satisfaction, intentions to revisit the hotel, and word of mouth. Recent studies have confirmed the same (Bovsh et al., 2023). Hoteliers need to give more emphasis on IT security. Luxury hotels better understand IT security risks and install more security systems to protect guests' valuable information (Kim et al., 2013).

The absence of an IT department in hotels is a cause of concern, as most hotels use wireless networks for their routine operation (Kim et al., 2013). The reliability of hotel information systems is essential for guest information security (Kim et al., 2013). Table 8 enlists measures taken by the hotel to safeguard guest information stored in the system.

<b>Table 8</b>	
<b>INFORMATION SECURITY MEASURES</b>	
Virus security /Antivirus software (Anichiti et al., 2021; H. B. Kim et al., 2013; J. S. Kim et al., 2013)	Internet security systems scanner (H. B. Kim et al., 2013; J. S. Kim et al., 2013)
Hardware firewall (J. S. Kim et al., 2013)	Vulnerability assessment scan (J. S. Kim et al., 2013)
Physical security (J. S. Kim et al., 2013)	An intrusion detection system (J. S. Kim et al., 2013)
Software firewall (J. S. Kim et al., 2013)	Digital servers (J. S. Kim et al., 2013)
Non-reusable passwords (J. S. Kim et al., 2013)	Honeypots (J. S. Kim et al., 2013)
Encrypted login (J. S. Kim et al., 2013)	Network firewall security (H. B. Kim et al., 2013)
Image servers (J. S. Kim et al., 2013)	Database security (H. B. Kim et al., 2013)
Biometrics (J. S. Kim et al., 2013)	Data and software security (H. B. Kim et al., 2013)
Encrypted files (J. S. Kim et al., 2013)	Network access (H. B. Kim et al., 2013)
Discarding management (H. B. Kim et al., 2013)	Terminal management (H. B. Kim et al., 2013)
Documentation control (Anichiti et al., 2021; H. B. Kim et al., 2013)	Computer security (Anichiti et al., 2021; H. B. Kim et al., 2013)
Locks management (H. B. Kim et al., 2013)	Entry control (H. B. Kim et al., 2013)

**CONCLUSION AND RESEARCH IMPLICATION**

This study classified hostel safety and security services into different dimensions and provided a list of hotel services for each dimension. Synthesis of research articles uncovered dimensions of HSS services along with their variables. It highlighted the present structure of these dimensions in the form of issues, challenges, physical measures, practices, and procedures in hotels. The study has presented essential findings from the previous 30 years of research.

The research gives valuable insights to hotel industry managers and government and non-government organizations, which will be helpful in the formulation of better policies for the hotel sector. These dimensions are intended to provide a more precise understanding to hotel managers on how best to inspect their operations to identify gaps and improve their safety and security services. The advancement of technology and availability of elaborated hotel safety and security features will make guests better aware of safety and security issues and help them make informed decisions for selecting safer hotels. The study also gives researchers insights into the present shape of hotel safety and security services in hotels. Further, this research has highlighted the studies already done under each dimension that are useful for filling gaps in the literature.

### **FUTURE RESEARCH RECOMMENDATIONS**

The research also found gaps in the literature that need filling. The studies focusing on comprehensive safety and security services are scarce. Only a few qualitative studies are available to understand guest perspectives on safety and security services in various hotel categories. Further research is required to understand the specific HSS needs of different age groups, gender including the LGBTQ+ community, especially abled and various income groups. Studies must also be conducted to establish the role of HSS services in guest satisfaction, brand image, repeat business, and hotel selection. The safety and security features must be ranked to understand the importance of specific variables so that HSS services can be designed to meet customer needs in all types of hotels.

### **LIMITATIONS OF THE STUDY**

The study's primary limitation is that it only included data from Elsevier, Emerald Insight, Taylor and Francis, Sage, Springer, IOP Conference Series, and MDPI. Having non-premier directories may provide further insights into the hotel safety and security dimension. However, the quality of the results from non-premier directories cannot be guaranteed. Future studies can focus on the last 10 -15, which can be valuable in identifying obsolete variables. This systematic review has focused on research studies on safety and security services. Future reviews can be conducted on guest satisfaction, selection factors, and brand image studies to extract information related to HSS services.

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