IMPACT OF INNOVATIVE HI-TECH SERVICES ON HOTEL PERFORMANCE IN DELHI - NCR

Thesis Submitted for the Award of the Degree of

DOCTOR OF PHILOSOPHY

In

Hotel Management

By

Milan Sharma

Registration Number: 42000499

Supervised by

Prof. (Dr.) Amrik Singh (11648)

School of Hotel Management and Tourism

Lovely Professional University, Punjab

LOVELY PROFESSIONAL UNIVERSITY, PUNJAB

2025

DECLARATION

I, hereby declared that the presented work in the thesis entitled "Impact of Innovative Hi-Tech Services on Hotel Performance in Delhi-NCR" in fulfilment of degree of **Doctor of Philosophy (Ph. D.)** is outcome of research work carried out by me under the supervision of Dr. Amrik Singh, working as Professor, in the School of Hotel Management and Tourism of Lovely Professional University, Punjab, India. In keeping with general practice of reporting scientific observations, due acknowledgements have been made whenever work described here has been based on findings of other investigator. This work has not been submitted in part or full to any other University or Institute for the award of any degree.

(Signature of Scholar)

Name of the scholar: Milan Sharma

Registration No.: 42000499

Department/school: School of Hotel Management and Tourism

Lovely Professional University,

Punjab, India

CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled "Impact of Innovative Hi-Tech Services on Hotel Performance in Delhi-NCR" submitted in fulfillment of the requirement for the award of degree of **Doctor of Philosophy (Ph.D.)** in the Hotel Management, is a research work carried out by Milan Sharma, 42000499, is bonafide record of his/her original work carried out under my supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

(Signature of Supervisor)

Name of supervisor: Dr. Amrik Singh

Designation: Professor

Department/school: School of Hotel Management and Tourism

University: Lovely Professional University, Punjab, India

ABSTRACT

The aim of this study was to examine the Impact of Innovative Hi-Tech Services on Hotel Performance in Delhi-NCR. The study emphasizes the necessity of implementing innovative technology to improve hotel performance. Key performance metrics, including as staff performance, financial performance, and guest satisfaction, were recognized as essential elements affected by Innovative Hi-Tech Services. Further, examined the attitude of managers on intention of adopting the technology in 5-star and 5-star deluxe hotels of Delhi-NCR. Which assessed the relationship between attitude and intention. Further, assessed the relationship between employee performance, financial performance, and customer satisfaction of Hotel performance. Based on extensive literature review, factors in context with attitude and Hotel performance were considered to study. A questionnaire was developed to gather data to fulfil the study's purpose. The study included both primary and secondary data. Data was collected throughout the year in various months from multiple hotels in Delhi. Additionally, an investigation was conducted utilizing several statistical approaches and tools. Attitude has been measured on three significant factors such as perceived ease of use, Experience, Performance Expectancy while intention is also impacted by exogenous factors such as risk and cost. Hotel performance has been measured by three significant factors such as employee performance, financial performance and customer satisfaction. Structural equation modelling (SEM) applied to analyse the data in the present study. All the constructs of attitude and hotel performance were evaluated and assessed for their relationship with adoption of innovative hi-tech services. The hypotheses were formulated to ascertain the outcomes and path coefficients produced by SmartPLS, together with the p-value. The software generated the p-values utilizing the bootstrapping method. Research confined to specific parameters about the equipment and methodologies utilized, the sample, and the procedures, contingent upon the researchers' resources. Subsequent to the data analysis, the results were scrutinized and the possible management implications were investigated. The potential proposals were included alongside the significant ramifications that the hotel industry must consider. The research study's objectives were executed and evaluated with the analysis outcomes. This investigation also addressed potential study limitations. The primary challenges of technology adoption emphasized in the current study. Currently, smart service integration, digital convenience, and tailored experiences are identified as critical factors influencing hotel success. The report delineates essential managerial consequences and recommendations for hoteliers to efficiently implement technological advancements, align services with guest expectations, and sustain a

competitive advantage. These changes have resulted in fierce competition among hotel businesses. The hotel operates in a highly competitive service industry and provides an extensive array of services. The correlation between performance factors and the inclination to accept innovative technologies was analysed and evaluated. Hypotheses and sub-hypotheses were analysed using structural equation modeling (SEM). The managerial consequences are analysed, and suitable recommendations are provided. The results indicate a substantial favourable effect of IHTS on various aspects of hotel performance. These encompass augmented employee productivity, elevated service quality, and heightened client happiness. The study emphasizes the significance of strategic technology planning, personnel training, data-driven decision-making, and a customer-centric approach in optimizing the advantages of IHTS. This research elucidates the significance of technology in the hospitality sector and offers critical insights for hotel management to optimize their operations and sustain a competitive advantage.

Keywords: *Hotel Performance, Innovative Hi-tech Services, Attitude, Intention, Employee Performance, Financial Performance, Guest Satisfaction*

ACKNOWLEDGEMENT

"To the guiding light of my life, My beloved mother."

I dedicated my doctoral work to my mother, **Mrs. Bijend Bala**. In her presence, my life unfolds as a valuable repository of gold; each moment, enhanced by her influence, transforms my existence into a radiant treasure. She has been my source of support. an unrelenting source of strength, inspiration, and unconditional love throughout my path. Your presence in my life exemplifies resilience, knowledge, and compassion. Your experiences and narratives vividly illustrated the globe, stimulating my imagination and fostering a desire for exploration.

My foremost acknowledgement goes to my esteemed supervisor, **Prof. (Dr.) Amrik Singh**, School of Hotel Management and Tourism, Lovely Professional University. Your guidance, profound academic insights, unwavering support, and meticulous attention to detail were the driving forces behind this research. Your patience and belief in this study, especially during methodological challenges, were invaluable. I am truly privileged to have learned from your expertise. I wish to express my gratitude to my former supervisor **Dr. Gaurav Bathla**, a distinguished research supervisor, for his intellectual direction and assistance. This thesis represents a crucial milestone in my life.

I sincerely thank to my esteemed committee members, **Prof. (Dr.) Sandeep Walia**, former COS of the School of Hotel & Tourism Management at Lovely Professional University, and **Dr. Sanjeev Sharma**, Lovely Professional University, for their invaluable reviews and expert recommendations throughout various stages of my research, which significantly enhanced the quality of my work from multiple perspectives. I would like to express my gratitude to Prof. (Dr.) Sanjay Modi, Pro-Vice-Chancellor of Lovely Professional University. I am also grateful to all the faculty members of the School of Hotel Management and Tourism for their assistance and guidance. I wish to convey my profound appreciation to **Prof. (Dr.) Shankar Kumar**, Head of the School of Hotel Management and Tourism. I am immensely thankful to **Lovely Professional University (LPU)** for providing a stimulating research environment, necessary infrastructure, and continuous support that facilitated this academic endeavor.

I am indebted to **Dr. Ashish Kaushik**, DCRUST, Murthal for his continuous support and faith in my abilities. I am grateful to my wife **Dr. Shameema Rana** for extended her support and guidance in various phases of my PhD journey. I would like to express my gratitude to **Dr. Rohit**, Assistant Professor at SGT University, and **Ms. Priya**, Lecturer at IHM Chennai, for their exemplary support. Their essential counsel assisted me in clarifying the misunderstanding

and surmounting the challenges encountered during my research. I have significantly disrupted both of them throughout my academic experience. I am profoundly grateful to numerous persons for their assistance in making this work feasible. It is a profound pleasure to convey my gratitude to them through these succinct words. A special note of thanks to the **management and staff of the 5-star and 5-star Deluxe hotels in the Delhi-NCR region** who graciously participated in this study. Your willingness to share invaluable data and practical insights made the empirical testing of my conceptual model possible and gave the findings true managerial relevance.

Above all, I am indebted to my family I wish to express my gratitude to **Almighty God**, my father, **Dr. Balwan Singh** for his support and motivation during my journey, my mother, **Mrs. Bijend Bala**, my wife, **Mrs. Shameema Rana**, my brother, **Chetan Sharma**, my sister, **Ekta**, and my son, **Himanjay**, for their unwavering support throughout the successful attainment of my Doctor of Philosophy (Ph.D.) degree.

This PhD thesis is wholeheartedly and humbly dedicated to my parents, Dr. Balwan Singh and Mrs. Bijend Bala, Your lives have been the truest definition of resilience, sacrifice, and unconditional love. The values you instilled of perseverance, integrity, and the pursuit of knowledge were the foundational strength that sustained me through this journey. Every page of this work is a testament to your endless belief in my abilities

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Chapter - 1
Introduction

The Tourism and Hospitality sector is currently growing at one of the fastest rates in the world, making a substantial contribution to job creation and economic gains. The hospitality industry is that part of the service sector that deals with the sale and provision of lodging, food, and drink in establishments like hotels, restaurants, and pubs (Teng, 2011). A hotel is a large establishment that consists of numerous units that work together to make the guest's stays as pleasing as possible. The largest sector of the economy that is currently facing significant difficulties is the tourism and hospitality sector. The industry in question has been recognized as one of the fastest growing, accounting for around 10% of the global gross domestic product (GDP) (Hole, 2019). Innovations aid in the investigation of methods for augmenting income streams from many services associated to hospitality and tourism, including accommodation, food and beverage, leisure, and entertainment. The tech revolution made the substantial shifts across administration and operation of the hotel business. Gong and Ribiere (2021) suggest that with the use of a combination of information, processing, communication, and networking technologies, the notion of digital transformation improves an entity by causing significant changes to its characteristics. Modern, cutting-edge technology is being used by the sector to expand its area of operation (Sharipov et al., 2022; Bilgihan & Ricci, 2024). With increasing demand of customers to experience something new hotels are adopting cutting edge technology which create a long-lasting impression in guest stay in hotel.

The present state of the Indian hotel sector is covered in this chapter. The purpose of this study was to determine the significance of implementing technology, its effect and perception of managers in adoption on new technology.

This chapter gives a description of the following:

- **Research Background and Motivation**
- **Overview of Tourism and Hospitality Industry**
- **Overview of Indian Hospitality Industry**
- **Introduction to Hotel**
- **5-star and 5-star deluxe hotels in Delhi NCR**
- **The rise of Hi-Tech services in the hospitality industry**
- **Technology Adoption and Implementation**

- **Bibliographic analysis of Innovation in Hospitality**
- **Research Problem**
- **Organization of Thesis**

1.1 Research Background and Motivation

The hotel industry particularly in the realm of 5-star hotels, is experiencing a swift evolution propelled by technological innovations (Bagadiya & Kathiriya, 2024). Incorporating state-of-the-art technology services has become essential for hotels aiming to improve guest experiences, optimize operations, and ultimately increase revenue (Bharwani & Mathews, 2021). In developing regions like Asia, Latin America, and Africa, hospitality brands have unique potential as well as difficulties (Stephenson, 2014). The need for hospitality services has sharply increased in these areas due to rapid economic expansion, urbanization, and rising disposable income. Among this Indian Hospitality Industry, a dynamic economic centre for the country, hosts a variety of 5-star hotels that lead the way in embracing these technological advancements (Leal, 2024).

The History is dated back to in the 19th century, great towns expanded, sea transportation improved, and railways were introduced (Rodrigue, 2020), launching the hotel sector (Rogerson & Rogerson, 2020). Forts and its surroundings would typically care for travellers in exchange for a description of their voyage or updates from nearby cities and towns during the Mughals' reign. Ancient and medieval Indian monarchs and emperors-built serais and Dharamshala on elevated roadways (Pandey, 2019). To accommodate society's varied classes, political and religious forces called for better facilities. Catering in India developed due to the influence of many cultures and rulers. Most of the new luxury hotels were run by Western families. Europeans introduced structure to India's hotel business during colonial times. The British and Swiss ran most Indian hotels after introducing them. The Bombay hotel opened in 1799. Modern hotels came to Kolkata from the British. John Spence started with hotels. Asia's first hotel, Spence's, opened in 1830. Indian Government form the ITDC for providing the collective Tourism amenities include lodging, dining, relaxing, shopping, hotel advice, required shopping, and an in-house travel agency. Two of India's top hotel chains, Oberoi's and Taj, acquired many heritage sites. The hotels created a premium service and quality level and expanded outside India. The Taj, Lake Pichola estate in Udaipur, and Rambagh Palace in Jaipur, all erected during royal grandeur, were connected. Mr. Mohan Singh Oberoi leased the Shimla Carlton Hotel in 1903 and renamed it Clarks Hotel in 1927. Three non-franchised

Welcome Group Hotels were built in 1975 and 1977 with the slogan "Be Indian, Buy Indian." In 1978, several hotels hired expatriates to refresh staff training and apply Sheraton management without a management contract. In conclusion, the Welcome Group started well. Numerous factors, including the growing purchasing power of domestic travellers, growth in the commercial sector, a surge in international tourists, a flourishing airline industry, and programs spearheaded by the government to boost the sector, have contributed to the notable growth of India's hospitality industry in recent years (Gautam, 2021).

The industry is further being propelled by technological advances in the form of innovation. The future of the hospitality business depends on creative diversification strategies. Fierce competition among hotel giants has resulted in innovative ideas, leading to impressive hospitality products and services (Gelbman, 2021). In order to leverage tried-and-true ideas that bring in large sums of money by drawing in both hotel guests and outside visitors, hotels are implementing new operating models by renting or managing external brands of dining establishments, spas, and lounges. Big data, machine learning, augmented reality, and the internet of things, among others, provide a range of revenue-generating and cost-saving options, allowing hotel operators to achieve unprecedented levels of profitability (Milton, 2024). Still there is lacking the thoroughly comprehension of their effects how they influence the performance of 5-star hotels in Delhi NCR and it is difficult to attain. Some current studies have investigated the possible advantages of technology in the hospitality sector, Few resources are available empirical evidence that specifically analyses link between advanced services and essential performance metrics (KPIs) like customer satisfaction, operational efficiency, revenue generation, and cost reduction. This study seeks to explore the extent to which the adoption of cutting-edge technological services impacts the performance of luxury hotels in the Delhi NCR region. This investigation aims to yield significant insights for hotel managers, policymakers, and industry stakeholders, allowing them to improve their strategy and make well-informed decisions. Research like this improves our present knowledge of the changing dynamics within the hospitality sector in the context of the digital era.

1.2 Overview of Tourism and Hospitality Industry

In recent years, the hotel and tourist industry has grown to become a major player in considerable importance, within the global economic landscape, playing a pivotal role in the enhancement of a national economies (Dicken, 2007) and the facilitation of international trade. The domain encompasses a multifaceted array of sectors, including but not limited to

accommodation, food and beverage services, transportation, and travel agencies. The expansion of the industry can be attributed to several pivotal factors, including the rise in disposable incomes, due to globalization and the ever-increasing rate of technological development (Song & Han, 2023; Behera & Karthiayani, 2022). In contemporary discourse, It deals with hospitality and tourist has encountered a plethora of challenges, encompassing economic recessions, political volatility, Covid pandemic and environmental calamities (Pedersen, 2022). India, characterized by its profound cultural and historical legacy, along with its ecological diversity, varied terrains, and numerous attractions, stands as one of the most sought-after holiday destinations globally. The industry has persistently transformed to address the dynamic needs and preferences of travellers, integrating innovation and technology to enrich guest experiences. The allure of the industry is rooted in the extensive influence it exerts on any given economy. In India, the tourism and hospitality sector, often referred to as the "sunrise industry," has surfaced as a pivotal catalyst for growth within the services domain. This prominence has consequently led to the significant growth of the Indian tourism and hospitality sector within the broader spectrum of service industries in the nation. According to the Hotel Association of India report of vision 2047, Between April and June 2022, USD 16.4 billion came into the tourism and hospitality business as foreign direct investment. From USD 122 billion in 2020 to USD 135.4 billion in 2021, the combined contribution of tourism and hospitality to India's Gross domestic product (GDP) returned to its pre-pandemic level of USD 191 billion in 2019. With a score of 4.1, India came in at number 54 on the Travel and Tourism Development Index 2021. It has been reported by the World Travel and Tourism Council (WTTC), India achieved a notable ranking of 6th in 2021 regarding its contribution to GDP, following the United States, China, Japan, Germany, and Italy. The business is predicted to generate USD 50.9 billion in visitor export revenue by 2028, up from USD 28.9 billion in 2018.

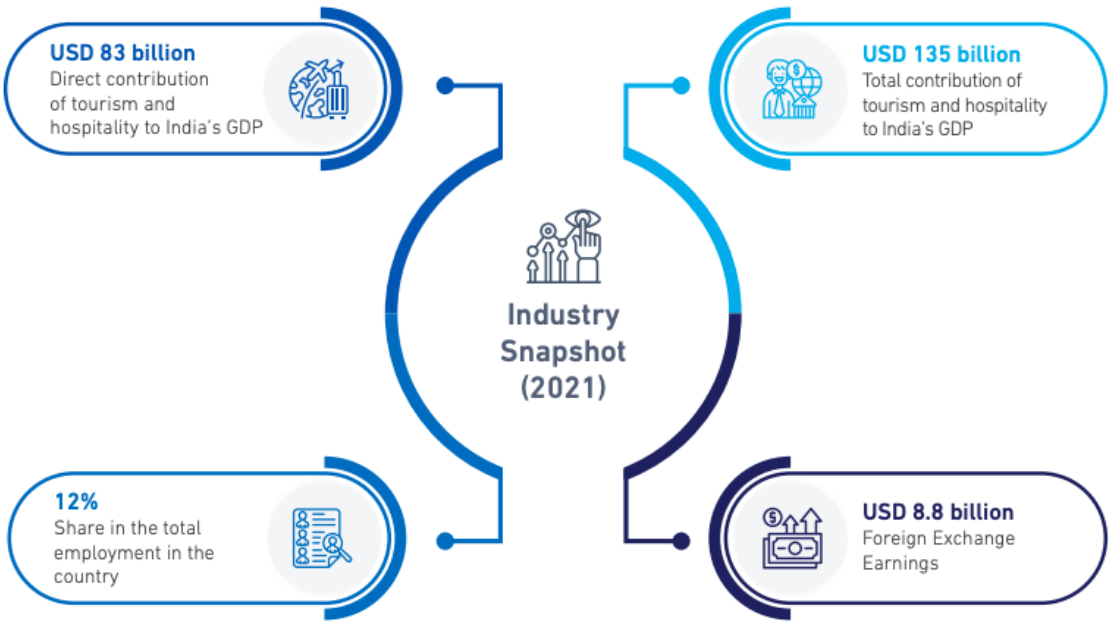

Figure 1.1: Key facts of Tourism and Hospitality Industry in India

Source: *Hotel Association of India (HAI) vision 2047*

1.3 Overview of Indian Hospitality Industry

The Indian hospitality sector has undergone considerable expansion in recent years propelled by elements including economic liberalization, rising disposable incomes, and the emergence of a burgeoning middle class (Kaushal & Srivastava, 2021; Tran, 2022). The hotel industry within the nation has experienced significant growth, characterized by a varied assortment of establishments that serve the needs of both domestic and international visitors. The hospitality business is critical to the tourism industry, generating foreign exchange, revenue, and job opportunities in the host community. The hospitality industry in India has grown significantly due to factors like increased domestic traveller spending, commercial development, foreign tourism, airline growth, and government initiatives.

Now a days robust hotel room demand in business cities, fuelled by MICE and other business-related travel. In addition to leisure travel, corporate travel income increased when businesses reopened after the closure. Staycations, weekend getaways, and social events are gaining popularity. This has led to increasing hospitality industry business. Improved road infrastructure, especially in tourist attractions like hill regions, has helped expand vehicle traffic nationwide. This fast recovery following a slump is due to increased demand and a shift in travel perception. India has a rich history in hospitality and holds a distinct place in the global

hotel industry. For decades, the Taj Group, Oberoi Hotels & Resorts, ITC Welcome Group, and ITDC dominated the Indian hotel business, with few international names present as shown in figure 1.2. The Indian hotel industry is categorized according to the type of establishment, encompassing independent or unbranded hotels, contemporary hotel chains, and branded or traditional hotels. The independent or unbranded segment constituted roughly 70% of the total hotel room inventory in the year 2020. It is anticipated that contemporary hotel chains will account for approximately 6% of the total available hotel rooms in India by the fiscal year 2025.

Figure 1.2: Some of International and Domestic Hotel Brands

Source: *HAI vision 2047*

As disposable incomes increase and millennials emerge, the hospitality industry swiftly adopts new tools, technology, and digital platforms to enhance consumer experience. Technological advancements have improved organizational efficiency and customer happiness. Companies are also working towards capitalising on the strength of their brands and identifying chances to expand beyond conventional hotel stays in order to establish global travel and service companies. The hotel business relies heavily on tourism earnings, with ministries like tourism, railways, and civil aviation contributing to its growth. The rapid growth of the country is due to its expanding prominence in global tourism, international investments, and government modernization programs.

Research by Investment Information and credit rating agency (Icra) Ltd. indicates that the Indian hotel industry is expected to experience a revenue growth of 13–15% in FY24, despite

potential demand impacts from more Covid waves. The resurgence in demand over the past year, expected to persist in FY24, has been driven by travel within the country for leisure purposes, business trips, and an uptick in international visitors, as well as an increase in bookings for MICE events. Events like the G20 summit and the ICC World Cup 2023 could be good for the business. ICRA thinks that between 70 and 72% of top hotels in India will be full in FY24, and the average room rate will be US$ 73.24 to 75.68 (Rs. 6,000 to 6,200). Bangalore, Chennai, and Hyderabad, among other markets, benefited from MICE activities like weddings and more business travel in FY23. Since the third quarter of FY22, demand for vacation spots has been strong. In FY23, rental rates in Mumbai and Delhi were higher than 75%. The hotel supply pipeline anticipates expanding at a pace of 3.5 to 4% per year for the next three years, adding about 15,500 rooms to the 94,800 premium hotel rooms that are already available in 12 key towns across India. In the medium run, demand will rise while supply stays low, allowing an upcycle to happen.

1.4 Introduction to Hotel

Lodging and other services are offered by establishments known as hotels. They vary from inexpensive hotels to five-star resorts. With their many amenities, including restaurants, bars, and conference rooms, hotels are vital to the travel and hospitality sector. In a more general sense, a hotel is any establishment that offers lodging, food, drink, and other guest services to anyone who is physically and mentally prepared to pay for them (Ahmed, 2021). A hotel's amenities and services may differ based on its category and kind. Pricing tactics, brand equity, marketing models, and services offered are the main tools that hoteliers use to attract their target clients. The fifth Duke of Devonshire first used the term "hotel" to designate lodgings in London about the year 1760. A townhouse in a big city in many nations, including the United Kingdom, Ireland, and others, once belonged to an aristocratic family. The word "hotel" can also mean a hostel, where people stay for a short period of time (Tewari, 2016). Most modern hotels are small to medium-sized companies; the hotel industry offers housing and related services; it is a part of the hospitality industry (Djordjevic & Jankovic, 2015). The hotel is considered to be one of the first commercial institutions in the world that provides services to customers, as stated by Whitla et al., (2007). A hotel provides a variety of goods and services, including rooms, meals, drinks, room service, 24-hour a la carte dining, a restaurant serving multiple cuisines, meeting rooms, valet parking, a spa, a fitness centre, and transportation-related assistance. Visitors from all over the globe reserve rooms at the hotel,

despite the fact that many people prefer to stay at well-known hotel chains due to the high quality of their services. A consumer is always seen as a visitor in inside the hotel sector, and their assessments of quality of service and value can vary.

1.4.1 Hotel Classification

The hotel can be categorized in a number of ways based on its features, customers, size, star rating, location, duration of stay, and other factors. Hotels, throughout the nation are categorized by Ministry of tourism body HRACC into one- to five-star, five-star deluxe, and heritage hotel categories. According to Ministry of Tourism, Government of India (2023) statistics report 41 hotels which are 5 star deluxe, and 5 star hotel nominated in Delhi NCR (Annexure-1). Through this study, we come to know the features, facilities, and services of 5-star and 5-star deluxe category hotels.

Rating of hotels in India:

1) 5 - star deluxe hotel
2) 5 – star hotel
3) 4 – star hotel
4) 3 - star hotel
5) 2 - star hotel
6) 1 - star hotel

1.4.2 5-star deluxe and 5-star hotels in Delhi NCR

There is a constellation of five-star deluxe and 5-star hotels in India that provide a synthesis of modern luxury with traditional Indian hospitality. Located in popular cities and tourist spots, these five-star businesses serve a wide range of customers, from international business visitors to leisure tourists and ultra-wealthy people (Shahid & Paul, 2022). These hotels are the gold standard of hospitality, with a reputation for first-rate service, delectable meals, and plush rooms.

The luxurious 5-star deluxe provides with amenities and attributes that outperform the existing spectacular 5-star properties in India provide a wide variety of experiences, there are state-of-the-art exercise centres with cutting-edge equipment, and for those with more specific needs, there is a specialized concierge service. In addition to providing guests with opulent accommodations, 5-star hotels in India are vital to the growth of the tourist sector in the nation.

They introduce foreign tourists to the natural wonders, architectural wonders, and cultural legacy of India. As a result of the first-rate service they provide, these hotels help boost India's reputation as a premier vacation spot worldwide. A great number of luxurious 5-star hotels are located in the vibrant and multicultural Delhi NCR area, making it ideal for upscale vacationers. The contemporary elegance and traditional Indian hospitality seen in these lavish places harmonize in perfect harmony. With locations ranging from the ancient core of Delhi to the modern financial hubs of Noida and Gurgaon, these hotels provide a wide variety of experiences. When it comes to Indian hospitality, these hotels are legendary for their first-rate service, delectable food, and plush rooms. Some of the many features offered by these five-star deluxe hotels in the Delhi-National Capital Region include luxurious rooms, state-of-the-art fitness centres, and spas on par with the best in the world. These hotels are ideal for leisure travellers who want to experience the city's rich history and culture as well as business travellers who are in search of a peaceful escape. These hotels are conveniently located near many restaurants, shops, and attractions, making them ideal for business travellers and tourists alike.

1.4.2 Different parts of a hotel

There are a lot of different tasks that need to be done for hotels to run smoothly. Many teams work together to make sure that guests have a relaxing and enjoyable stay, from the front desk to the housekeeping staff. The four main operating departments of a lodging establishment are the food and beverage service department, the front office department, the food production (kitchen) department, and housekeeping department, as shown in fig 1.3 even though each department has a distinct array of functions (Krstić et al., 2015).

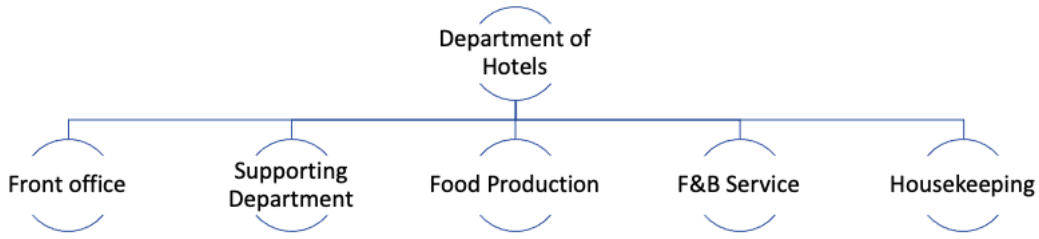

Figure 1.3: Departments of hotel

Source: (Author's own)

Front office: The front desk and its several departments—reception, information, cash, reservations, telephone, bell desk, and concierge—are the parts of a hotel that guests notice first and foremost. Guests' first impressions of the hotel are usually formed at the reception desk, which is also the nerve center of the hotel. Reason being, it serves as both the initial and final touchpoint for clients with the establishment (Tewari, 2016). The hotel's front desk and restaurant are two of its most lucrative departments. According to Bhatnagar (2006), the front desk is accountable for generating 60 to 70 percent of a hotel's revenue and ensuring a high level of occupancy.

Housekeeping: Cleaning and upkeep of the hotel's guest rooms is the responsibility of housekeeping. Furthermore, to ensure that the information related to a guest room is updated and in sync with the hotel's front desk department. Starting at the front desk and working our way down to cleaning, we make sure to regularly update every room's condition. It is now possible to get a status update on a room thanks to current technologies including phone systems, mobile housekeeping applications, hotel software, etc. In order to fix or replace them, the housekeeping crew finds several maintenance teams. Housekeeping is obligated to maintain the cleanliness of the hotel's common areas and back area at all times (Raghubalan & Raghubalan, 2009).

Food & Beverage Service: The hotel's food and beverage service is among its most important and customer-focused departments. In response to customer demand, it offers ready-to-eat meals, drinks, and tobacco products. Moreover, it offers a wide variety of services through its many venues, including dining establishments, cafes, banquet halls, lounges, bars, cuisines, etc. According to Singaravelavan (2011), this division is primarily responsible for managing the guest's food and drink service.

Food Production: Making the items listed on the menu is the main purpose of the food manufacturing process. In addition, the cold, butchery, bakery roast, and other departments of the food production department work together to swiftly make high-quality meals. A variety of cold salads, appetizers, meats, and sandwiches are made and stored. Breakfast buns and other hot and cold baked goods are made at the bakery. Staff in the kitchen work in tandem with those in the restaurant, room service, bars, and banquet halls to fulfil food requests.

Supporting department: The hotel's back-office staff is like the unsung hero; they work tirelessly behind the scenes to make sure everything runs well. Numerous critical functions,

including as accounting, HR, marketing, and IT, fall within the purview of this division. Payroll, financial report preparation, and handling of financial transactions are all responsibilities of the accounting team. The hotel's competent and enthusiastic staff is the result of the efforts of the human resources department, which is responsible for hiring, training, and managing staff members. Hotel promotion, booking, and revenue management are all responsibilities of the sales and marketing team. Keeping the hotel's networks and systems up and running smoothly is the responsibility of the information technology department. The back-office department is crucial to the hotel's performance because of how well it manages these essential responsibilities (Tripathi et al., 2021).

1.5 The rise of Innovative Hi-Tech services in the hospitality industry

Hotel brands in India have been investing in digital technologies and platforms, enabling enhancement in pre-booking as well as post booking experience. Due to the fact that there is significant rise in evolving expectation of customer. Customers now expect more than just room service and prices. It has begun to look into predictive services, personalized exchanges, and experiences that are linked. The hospitality sector has experienced a technology transformation, with cutting-edge services enhancing visitor experiences. Hotels are utilizing data analytics to acquire important insights into visitor preferences and behaviours, allowing them to provide personalized services. Over time, the hospitality industry has been growing and changing in many ways, making it one of the fastest and biggest areas in the world. Some researchers, like Srivastava (2024), say that adding technology to hotels is becoming more and more important because it changes the way people connect with and think about the services they provide. Efficiency in operations and satisfaction of guests are both greatly impacted by technological advancements. Saengavut et al., 2021 argued that technology adoption increases economic efficiency. Prior researches have been dedicated to Innovation and technology adoption but little has been done on impact on Performance of Hotel. Innovation is very crucial to be more competitive in market when we asses hotel performance as a result of innovation (Molina-Castillo et al., 2023).

1.5.1 Adoption of cloud-based automation:

A cloud-based property management system ensures customers a good customer experience, improved client relationships, enhanced productivity, and increased ROI. It also provides an enhanced level of security. Voice-activated assistants and smart room technology have grown

ubiquitous, offering visitors exceptional convenience and control. Moreover, the incorporation of IoT devices has allowed hotels to maximize energy efficiency and improve visitor security.

1.5.2 High-tech futuristic hotels

AI/ML, AR/VR, IoT, Blockchain, and Recognition technology are some of the key technological trends that are expected to be visible in the Indian hotel industry. Seventy-one percent of travellers are more likely to choose a lodging establishment with self-service options recognition technology because it makes check-in and check-out faster and more secure. Technology has infiltrated every facet of the industry, encompassing mobile check-ins, keyless entry systems, AI-driven chatbots, and virtual reality tours (Sharma et al., 2024).

1.5.3 Some examples of development across industry

Several hotel brands started using I-ZEST: IHCL's Zero-Touch Service Transformation in 2020. This digital solution allows guests to check in and out digitally, pay online, and access restaurant menus digitally through QR codes. This will help guests and employees keep their social distance while keeping services safe. Founded in 2017, a food tech start-up innovated a digital menu called ‘Dash Menu’. It replaced the paper menu with an electronic tablet, thereby enabling seamless interaction. The application also provides a short video of food preparation process, ingredients used, etc.

To give guests a completely contactless experience, JW Marriott Mumbai Juhu put QR codes in key places like the front desk, lift rooms, restaurants, and public areas for relaxation. Checking in and out, looking at the guest services directory and other hotel information, looking at menus, putting orders, paying for things, and making appointments have all been replaced by computers to cut down on the need for people to do them. Hyatt Hotels are adding better digital features to the World of Hyatt app. These changes will give guests greater authority over how they interact with Hyatt. No one in the hospitality industry was unaware of how urgent it was to Innovative hi-tech services both for hotel service providers and consumers (Marques et al., 2022). Due to a lack of research, the hotel industry remains a mystery when it comes to guest behaviour when it comes to innovation but it has positive impact on the economic sphere. It leads to success of organisation through improving the quality of the product, make it more efficient, cut costs, adapt to changing customer wants, and make more sales and money. In the hotel industry, innovation is a key factor that drives the organisational

performance (Buhalis & Leung, 2018). Recently various studies have investigated the technology adopted in hotels and their impacts. Service innovation consider very critical in hotel industry for example, the predominant advances in hotels are service and marketing developments, with some being disrupted by technological advancements. There is partial study of innovation in previous literature as, Technological analysis of performance has not been sufficiently tackled, with a focus on the employee and financial performance of this industry. Moreover, in-depth study is also lacking in India.

1.6 Technology Adoption and Implementation

There is a lot of preparation and execution that goes into the hotel industry's adoption and deployment of technology. Nam et al., (2021) advocate that expectations from guests, pressure from competitors, and financial constraints are a few of the elements that play a role in the choice to implement new technology. After settling on a new technology to use, hotels will need to shell out cash for the gear, software, and network upgrades that will be required. They must also train their staff to effectively utilize the new technologies and make sure it works well with everything else they already have (Marr, 2022). Giotis and Papadionysiou (2022) stated that the importance of incorporating new innovations in the tourism and hospitality technology business has increased significantly in recent years. New technologies have drastically changed how businesses operate, interact with customers, and eventually thrive, which has increased their total productivity (Pascucci et al., 2023). Innovative technology adoption and implementation within the industry have been found in a number of critical areas. Travelers now find it much easier to reserve a seat thanks to the introduction of reservation systems. Through web-based platforms or mobile applications, The convenience and versatility of internet travel booking platforms book accommodations, flights, car rentals, and other services (Li et al., 2023). Mobile applications have become essential resources for travellers and hospitality businesses alike. In order to accommodate individual preferences, streamline check-in processes, enable mobile transactions, and provide amenities that are pertinent to a given location, industry leaders in travel and hospitality have embraced innovative mobile applications. According to Arghashi and Yuksel (2022), using these apps has been shown to improve operational efficiency and boost consumer engagement. Chatbots and artificial intelligence (AI) are the subjects of interest. Chatbots and other AI-based technologies are now being used to automate customer assistance and service. Chatbots can help with the reservation process, offer personalized recommendations, and provide prompt answers to commonly

requested queries (Sharma & Singh, 2024). Putting such procedures into place has been found to boost satisfied consumers while also decreasing staff workloads, which allows them to focus on more complex tasks. The Internet of Things (IoT) facilitates communication between various systems and devices by connecting them to a network of intelligent gadgets. With the use of IoT applications in business, a number of features in hotel rooms can be automated and controlled, including as entertainment systems, lighting, and temperature (Mercan et al., 2021). The technology in question provides personalized visitor experiences, enhances security protocols, and enables efficient energy use. According to a study by Sharma & Singh (2024), the use of virtual and augmented reality technologies is transforming how travellers view and engage with different vacation destinations. Virtual tours of lodgings or attractions could be made available through the use of virtual reality technology, giving prospective guests unique experiences before they make a reservation. Improving on-site experiences through instant information transmission, navigation support, and interactive features is one potential result of augmented reality technology implementation. It is impossible to overestimate the importance of innovation in the success of hospitality firms, as illustrated in Figure 1.4. They can use it to improve their products, streamline their business processes, cut costs, adjust to changing consumer tastes, increase sales and profits, increase their market share, and create a distinctive brand identity that distinguishes them from their competitors. Particularly in times of hardship, innovation is a systematic approach to gaining a competitive edge in the travel industry and lodging establishments (Ziyae et al., 2022). Automating repetitious processes is the goal of the hotel industry's incorporation of automated systems. Robotics holds promise for a wide range of applications, including but not restricted to room service, baggage handling, and concierge services. It has been noted that automation technologies improve the effectiveness of back-office operations, such as accounting and inventory management procedures (Javaid et al., 2021).

The COVID-19 epidemic has expedited the use of contactless technologies in the hospitality industry. Digital key systems, mobile payments, and contactless registration and departure procedures have been shown to decrease in-person encounters and increase visitor safety (Roy & Pagaldiviti, 2023). It is likely that these technologies will remain popular when the present pandemic is over.

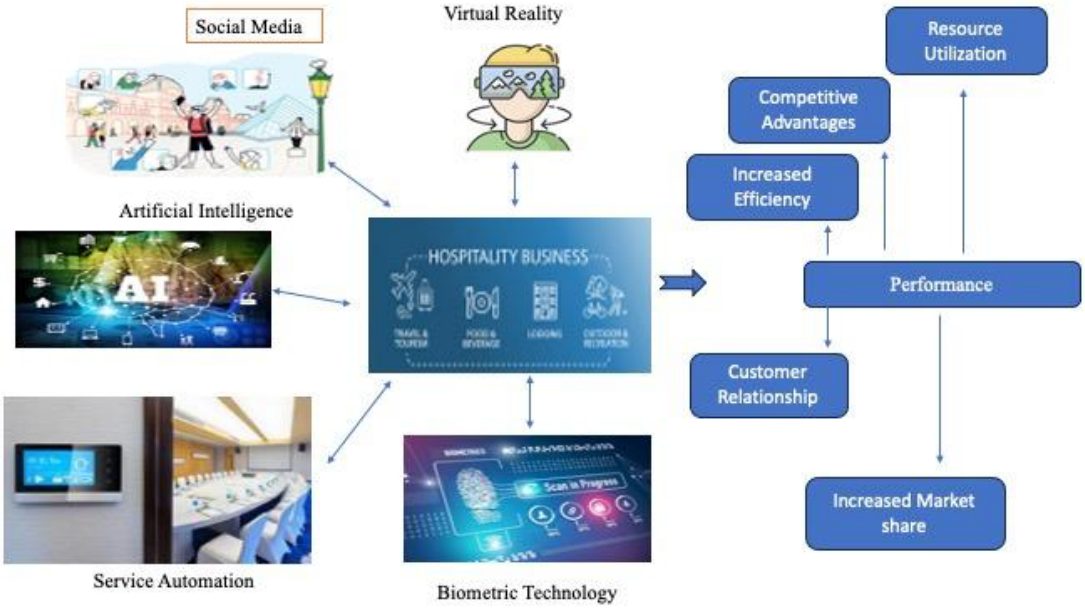

Figure 1.4: Summary of contribution of Innovative technology

Source: (Sharma & Singh, 2024)

1.7 Bibliographic analysis of Innovation in Hospitality Industry

The VOS viewer programme was used to conduct a co-occurrence analysis on 59 Scopus publications confined to innovation in hospitality for determining the prominent research areas in the field and their interrelationships. Figure 1.5 depicts the simultaneous presence of keywords with a frequency higher than 5. In this representation, the nodes represent the keywords, and their size corresponds to their frequency and co-occurrence. Significantly, the terms "hotel industry", “performance”, and "innovation" have bigger diameters in comparison to other nodes, suggesting their stronger associations with other keywords in the study and their central place within the research background. Specifically, keywords are categorised into four distinct clusters: green, blue, red, and yellow. Keywords inside the same cluster tend to occur together more frequently. Cluster 1 (Green) highlights the crucial connection between Innovation, Service Innovation performance and human resource for adoptive technology. The use of Innovation increases the performance and helps in human resource management is emphasised by keywords such as industrial performance, sustainability, competitive advantages and human resource. Cluster 2(Red) highlights the relation between customer experience and hotel. Quality of service is related to the knowledge sharing, quality management which is emphasised by these keywords. Cluster 3 (Blue) mainly focuses on innovative strategy implemented in service sector which helps in customer orientation,

innovative performance. This cluster represents a landscape where relation of innovation strategy is connects with performance attributes. Cluster 4 (Yellow) emphasises the integration of these digital technologies with hospitality, social capital and sustainable development.

The overlay map can effectively display the integration pattern of innovation in hospitality. The significance of an overlay visualization plot lies in its capability to accurately represent the integration of innovation in the research context. These visualizations are essential for examining the adoption pattern, impacting areas, and research forefront of innovation in hotel industry. The overlay map in Figure 1.6 illustrates the progression of research on integration of innovative technology and its influence in Hospitality industry from 2020 to 2022. The evidence indicates that the initial emphasis on analysing bruxism treatment has switched towards digital fabrication techniques. The colour scale represents the average publishing dates for each term, ranging from 2016 to 2022. The endpoints were determined automatically by VOS viewer. Therefore, certain terms highlighted in yellow have a significantly later average date within the dataset, whereas those terms highlighted in dark blue have an earlier average date. The density visualization utilizes colours to represent the distribution of nodes in the two-dimensional space as represented in Figure 1.7. The density display enables rapid identification of concentrated regions where numerous nodes are situated in close proximity to one another.

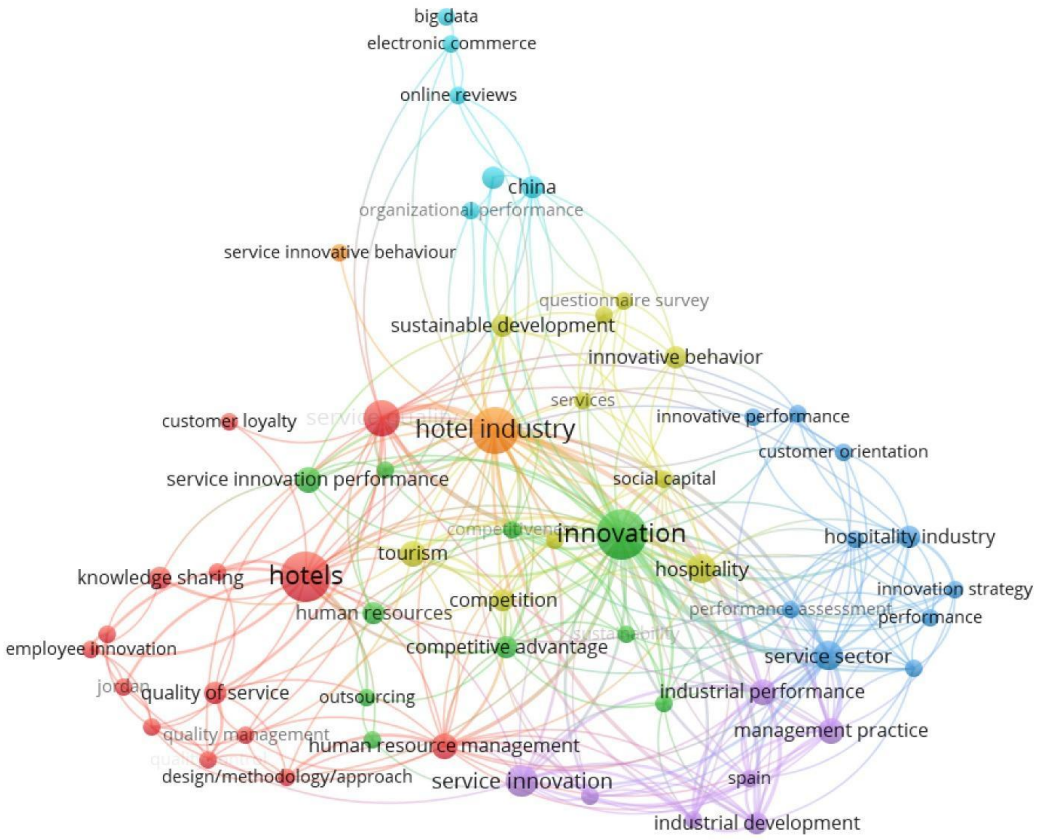

Figure 1.5: Network visualization map of keyword co-occurrence analysis for integration of innovative technology and its influence in Hospitality industry

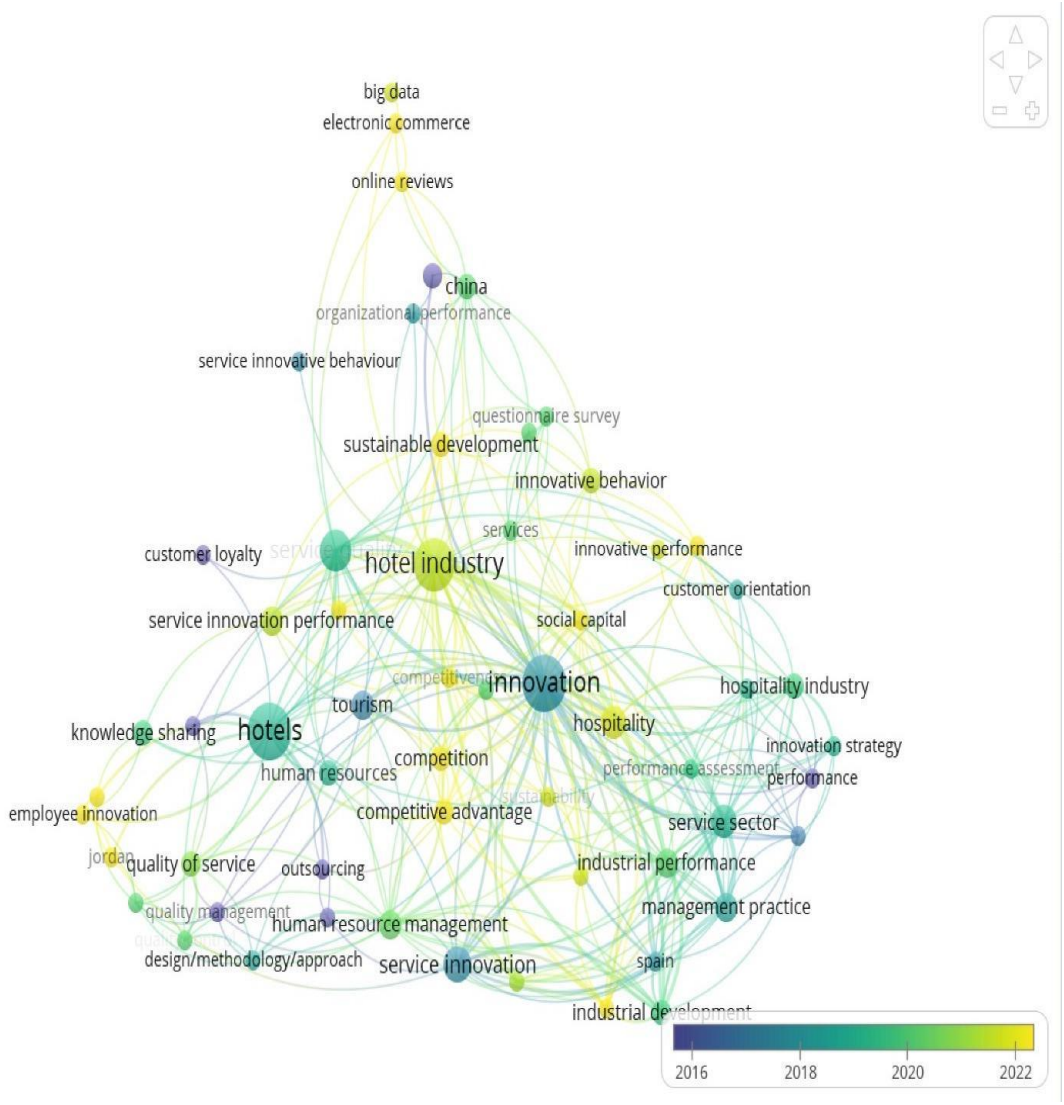

Figure 1.6: Overlay visualization map of keyword co-occurrence analysis for integration of innovative technology and its influence in Hospitality industry

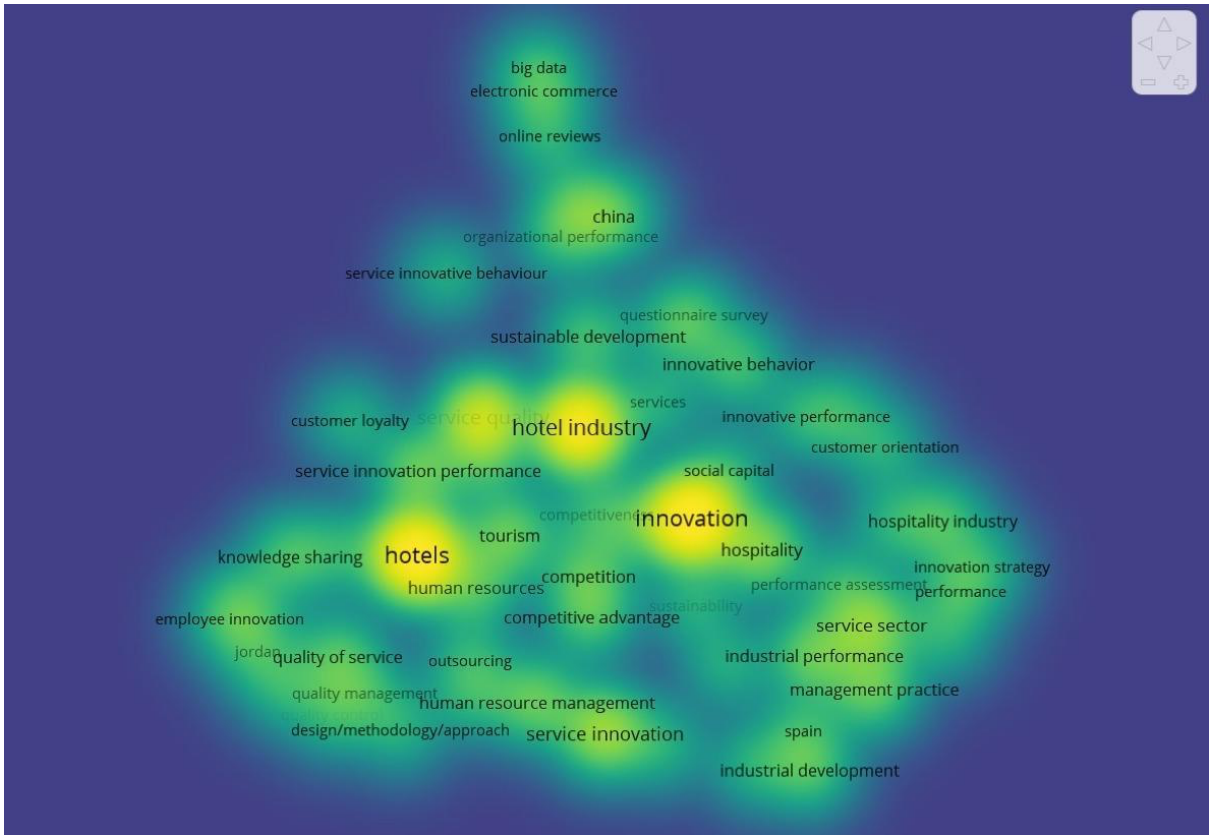

Figure 1.7: Density plot for frequently implemented innovative technology and its influence in Hospitality industry

1.8 Research Problem

The study intended to focus on various dimensions of technology integration concepts and its impact of performance of hotel. Although, numerous researches have been done on various aspects of Technology such as Innovation, service innovation, implementation, technology 4.0 (Blichfeldt & Faullant, 2021). Further, some previous studies have focused on Technology attributes and its prospects in future on employees, guests, preferences etc. however influence on employee attitude, hotel performance attributes have been largely ignored. Hence this study focuses on various factors of hotel performance which are affected by adoption of innovative high tech. This is complete approach to the perspective of hotel performance such as employee performance, financial performance and customer satisfaction (Phuong & Tran, 2020; Jawabreh et al., 2022; Ali et al., 2022).

The suggested study regarding the influence of cutting-edge technological services on the performance of five-star hotels in Delhi NCR carries considerable theoretical and practical

significance. This study enhances the current understanding of how technology adoption influences organisational performance within the hospitality sector from a theoretical standpoint. Through empirical examination of the influence of particular high-tech services on essential performance indicators, this study aims to enhance current theories and models. Based on extensive literature, it has been found that majority of the previous researchers have focused on adoption of innovative technology which directly link to organisation performance.

1.9 Organization of Thesis

The structure of thesis comprises five chapters as follows:

Chapter 1 Introduction

The initial chapter delves into the context of the study, examining the hotel sector in India, the hospitality landscape within the National Capital Region, the present condition of the hotel industry, the research dilemma, and the significance of the proposed inquiry. This introductory chapter thoroughly presents detailed information on the issue. This provides an overview of the current landscape of the Indian hotel industry and its potential for future expansion. The text highlights the significance of the technological advancement in hotel and directs focus towards the meticulous details that need to be addressed to achieve organisational goals. It also emphasises the ongoing gap in the study of hospitality sectors.

Chapter 2 Review of Literature

The second chapter examines prior research related to the thesis topic. A literature review is a thorough description of previous research on a topic, utilising books, scholarly articles, and other academic resources to evaluate the existing literature. A fundamental element of any research is a literature review. It establishes a solid basis for the successful execution of the research. It provides a framework for defining the aims of the present inquiry. The researcher acquired insights into the constructs related to existing gaps and research limitations from prior studies, while also establishing a theoretical framework for the analysis. It presents insights from prior theoretical and empirical research regarding the innovative hi-tech services and its adoption along with the aspects of organisation performance. This chapter provides a detailed discussion of the constructs utilised in the current investigation, together with their theoretical context examine prior research. It facilitates the identification of research.

Chapter 3 Methodology

The third chapter illustrates the development of the research study's methodology. This chapter encompasses the study's objectives, hypothesis formulation, research design, survey strategy, population, sample frame, research questionnaire design, statistical approach, and the discussion of data analysis tools. This chapter shifts the focus from theoretical to operational aspects by discussing the various methodologies employed for hypothesis testing in the current study. A self-administered questionnaire served as a quantitative instrument for gathering responses. This chapter comprehensively elucidates the statistical approaches employed in this study, alongside the principal analysis, sample characteristics, and methods for mitigating response bias. This chapter primarily emphasises the research preparation and technique blueprint.

Chapter 4 Data Analysis

This chapter examined the several statistical approaches and tools detailed in Chapter 3 and provided the results. The analysis of the data is a vital part of the investigation. The conclusions, findings, and remarks are contingent upon the data analysis. This chapter delineates the analytical approaches utilised in the study to derive inferences. It discusses the graphical representations of the respondents' demographic profiles. It provides a comprehensive evaluation of the research's content and affirms the reliability and validity of the results. It also examines the principal methods employed to analyse the study.

Chapter 5 Conclusion, Implication & Limitations

This chapter presents the conclusions from the data analysis of the study. The research hypotheses were formulated with consideration of the study's aims. It presents results according to the study's hypothesis. The complete result of the statistical study was under scrutiny, and conclusions were being deliberated. The substantial influence and interconnections among constructs were highlighted.

Chapter - 2
Review of Literature

2.1 Introduction

Recent years have seen a dramatic shift in the hospitality sector, fuelled by both shifting customer expectations and technology breakthroughs. As a result, hotels are increasingly adopting innovative Hi-Tech services ln order to better serve guests, simplify processes, and improve overall performance. Examining what is already out there, this literature review knowledge in the hotel sector, with an emphasis on the uptake and effects of technological services, 5-star hotels in Delhi-NCR. Relying on primary sources such as rigorous studies and scholarly papers from the past is essential for producing high-quality research. You may learn a lot about how to conduct this study by looking at similar ones, whether they were published or not. Before a project can be planned or started, it must first undergo a thorough literature evaluation. Reviewing previous literature has several uses, such as understanding preliminary studies, finding research gaps, developing ideas, and avoiding duplication of work by researching prior studies on related topics. There is a synopsis of relevant research on the subject at hand. In order to get a better understanding of the state of the art on the subjects covered by this study, it was necessary to examine older literature. The literature review is organised according to the following sections of this chapter:

- **Innovative Hi-Tech Services in the Hospitality Industry**
- **Managerial Attitudes Towards Hi-Tech Services**
- **Impact of Hi-Tech Services on Hotel Performance**
- **Comparative Analysis of Hi-Tech Services in Delhi-NCR Hotels**
- **Emerging Hi-Tech Services in Delhi-NCR Hotels**
- **Research Gap**
- **Summary**

2.2 Innovative Hi-Tech Services in the Hospitality Industry

Technology innovation is the term used to describe a variety of inventions related to technological advancements with the aim of either drastically developing new products or services or gradually improving current ones. Innovations in technology are having an impact on the hospitality sector. In the hotel sector, innovations such as mobile and kiosk check-in

systems, robot and ultraviolet (UV) light cleaning systems, robotics, artificial intelligence, and human-robot interactions have become more prevalent. According to the India Brand Equity Foundation (IBEF), 30.5 million foreign visitors are anticipated to arrive in India by 2028, and From an anticipated $75 billion in FY20, the country's travel industry is projected to reach $125 billion by FY27. Tourism and travel, two of India's most important industries, contribute about 199.6 billion US dollars to the country's gross domestic product. World tourism and travel council (WTTC) projects that India's travel and tourism sector will generate 7.1% annual GDP growth on average over the next ten years. Between April 2000 and March 2024, the hotel and tourism sector received a total of 17.2 billion US dollars in foreign direct investment equity inflows. This amounts to 2.54% of the total foreign direct investment received across all sectors. FTAs in 2023 totalled 9.24 million (Provisional), up 43.5% over the same period the year before as shown in fig 1.1. The hotel sector is important and contributes to India's economy as a whole. In order to draw in foreign investment, international brands like the Park Group, ITC, the Taj Group, and Radisson Hotels India are crucial. One of the top ten industries in India for FDI (foreign direct investment) is the hospitality sector (Sintala, 2019).

Technological Amenity	Description
High-Speed Internet Access (HSIA)	Provisioning of high-speed internet and free Wi-Fi to the guests **(Jung, Kim & Farrish, 2014)**.
Electronic Lockers	In-Room electronic lockers for better security that can be opened using an electronic code or smartphone by the guest **(Cobanoglu *et al*., 2011)**.
Keyless Entry	Provisioning the guests with electronic cards or smartphone-enabled keyless entry for hassle-free entry to the rooms **(Kazandzhieva *et al*., 2017)**.
Smart Mirrors	A room tablet controlled smart mirror to watch TV and access the internet through a bathroom mirror **(Ristova & Dimitrov, 2019)**.
Automated Check-in and Check-out	Digital kiosks and applications developed for card payment for automated check-ins and checkouts for the guests **(Kazandzhieva *et al*., 2013)**.
Climate Control Systems	Smartphone or tablet enabled climate control mechanism for the best guest experience.
Pay Per View TV	Digital videos or latest movies available through televisions available on a payment basis for the guests **(Bilgihan *et al*., 2016)**.
In-Room Desktop Computer and Printers	In-Room desktop computers and printers to create a business environment for the guests **(Cobanoglu *et al*., 2011)**.
Smart Rooms	The rooms capable of connecting to the smartphone of the guests and providing smart features such as lighting control, climate control, curtain folding *etc* **(Ristova & Dimitrov, 2019)**.
Digital Menu	A mobile-based digital menu application for ordering food and paying without any interaction with hotel staff in person or over the phone **(Jung, Kim & Farrish, 2014)**.

Figure 2.1: Technological Amenities presently utilised by the Hospitality Sector

Source: Verma & Thakur, (2022)

Due to the growth of the hospitality and tourism sector and the specific demands of the twenty-first century, hotels are undergoing substantial change in response to the traits, expectations, and attitudes of its patrons regarding amenities and services. When staying at a hotel or at a specific location, their attitude and acceptance lean toward customized care. Being contemporary tourists, they employ a variety of mobile tools and gadgets and are well-versed in digital technologies as shown in fig 2.1 various technology is currently adopted in hospitality around the world. Technological innovations implementation in the hotel service is an entire process in which new technologies represent the key factor for the hotel company competitive growth. When analysing and interpreting the problem of imposing cutting-edge technology like robots and artificial intelligence on the hospitality sector, there are a number of factors to take into account.

2.3 Managerial Attitudes Towards Hi-Tech Services

Following an overview of cutting-edge technological services for decision-making, we delve into pertinent literature, emphasizing the viewpoints of managers regarding the use of AI in decision-making. Recent literature has examined various constructs that impact attitudes within the hotel industry. The primary focus of examination includes Performance expectancy, Perceived ease of use, Experience, Attitude, and Adoption Intention. Additionally, two Exogenous variables—cost and risk—are also taken into account regarding intention (Table 2.1).

Table 2.1: Construct examined in literature for Manager attitude and intention

Authors and date	**Brief overview**	**Constructs**
Kim et al., (2020); Venkatesh et al., (2003); Ivanov et al., (2020); Cao et al.,(2021)	Performance Expectations impact emotions, which in turn impact the gadgets' acceptability or rejection. Important works that attest to the beneficial effects of technology on attribute performance expectation on intention to use a high-tech services/technology in organizational contexts	Performance expectancy
Kim et al., (2020); Saengavut & Jirasatthumb, (2021)	Technologies are facilitating many seemingly complex tasks. Individual perceptions influence the uptake of innovation and one important aspect of modern technology is how simple it is to use.	Perceived ease of use

Rivera et al., (2015)	Experiences with technology influence the user attitude through examining user intentions. In regard to intention to use, the connections among attitude, experience, and usefulness are examined.	Experience
Cao et al., (2021); Beck & Slubowski, (2022)	The larger the organisation the adoption rate of innovative technology is bit slow due to risk of various operational activities	Risk
Kim et al., 2020; Erdem et al., (2022)	According to several earlier studies, the direct impact of technology costs seems to go against the aim of adoption, with high costs seemingly encouraging uptake.	Cost
Alfandi (2020); Cao et al., (2021)	Adoption of new technology was promoted by a positive attitude, which was backed by a substantial link between attitude and intention to adopt.	Attitude
Ivanov et al., (2020); Ivanov et al., (2018); Agegnehu et al., (2019)	The term "technology adoption" refers to the process by which an individual incorporates and makes use of new technological tools into his or her daily job. Managers consider adoption of High-tech services which provides service which is acceptable.	Adoption Intention

Notes: PE – Performance Expectancy, PEOU- Perceived ease of use

Source: (Author's own)

2.3.1 Attitudes of Managers Towards Innovative Hi-Tech Services

There has been a notable increase in both theoretical and applied studies focusing on managers' viewpoints regarding the implementation of advanced technological services. Studies indicate that the perspectives held by managers play a crucial role in determining how their organizations adopt and utilize emerging technologies. To effectively implement and integrate advanced services, it is essential to maintain a constructive mindset that embraces change, is enthusiastic about investing in innovation, and proactively accepts new technologies. Lušňáková et al., (2022) emphasizes that leaders play a crucial role in inspiring employees to engage in organizational change. Implementation offers a chance for management to address

initial change errors. To positively influence managers' attitudes towards change, it is beneficial to provide information, engage in consultation, and ensure employee involvement. The commitment to change serves as a significant predictor of employees' behavioural support for change and their intention to leave the organization. To cultivate a workplace where employees are engaged and dedicated to their tasks, proactive management considers the perspectives and feelings of the workforce.

2.3.2 Factors Influencing Managerial Attitudes

Several critical factors influence managers' viewpoints on advanced technological services. Individuals often maintain an optimistic perspective on the adoption of technology when they believe it will result in enhanced efficiency, lower costs, improved customer experiences, and greater competitive advantages. The willingness of a company to embrace change, foster creativity, and invest in technology elements of its culture significantly influences managers' job satisfaction. Personal characteristics such as managerial skill, technical background, and individual inventiveness play a significant role in shaping perspectives on technology adoption. The willingness of a manager to embrace new technology is influenced by their level of technical knowledge and expertise; those with less experience may exhibit greater resistance. Providing managers with training and education can significantly ease the challenges associated with adopting new technology, enhancing their understanding and comfort with these services. From a management viewpoint, the adoption of technology is heavily influenced by customer expectations and market demands. In order to remain competitive, meet the evolving preferences of consumers, and enhance customer loyalty, managers face increasing demands to adopt advanced technological solutions. To effectively engage individuals in the adoption of new technologies, it is crucial to focus on their desires and align with their expectations. The majority of the study indicates that the demographic characteristics of respondents, such as age and work experience, had minimal impact on their perceptions of technology. In contrast, gender appeared to have a more significant influence. Additionally, the workplace environment had a limited effect; however, those employed in larger properties tended to be more sceptical about adopting innovations due to the considerable costs and risks involved (Ivanov et al., 2020).

Performance Expectancy

Expectations of performance and plans to act on them are both taken into account under the UTAUT framework. Venkatesh et al., (2003) state that under the voluntary situation, it seeks in order to clarify the goals of technology use and actual behaviour. It has four components,

and performance expectancy is one of them. Performance expectancy is shown in the model to have an indirect effect on behavioural usage but a direct effect on behavioural intention. According to the research, these traits contributed to how an organization embraced new technologies (Ivanov et al., 2020). An a paradigm that incorporates AI acceptance and avoidance established by Cao et al., (2021). The model is supported by empirical evidence and relates performance expectations, attitude, and intention to use. According to the study's analysis of 269 replies from managers in the UK, performance expectation positively affects both attitude and intention to use. The gadgets' acceptability or rejection are influenced by the user's emotional response to their expected performance (Gursoy et al., 2019). According to Xu et al., (2022), there is a different viewpoint that performance expectation does not encourage individuals to keep learning new technologies. In organizational contexts, there is evidence from the main literature on technology adoption that technology attribute performance anticipation positively affects intention to employ high-tech services and technology (Venkatesh et al., 2016).

Perceived ease of use

Views on technological application state by Saengavut and Jirasatthumb (2021), innovation is a factor that determines the intention to utilize technology. People's perceptions have a big role in how much innovation is adopted, and one important aspect is how easy new technology is to use. The Technology Acceptance Model uses two primary components indicate how users feel about new and improved technologies: perceived ease of use (PEOU) and perceived usefulness (PU). While PU necessitates a system that specifically improves work performance, PEOU, according to Davis (1989), does not use any mental or physical effort to demonstrate its metrics. Research from a range of sources indicates that PEOU affects PU which makes sense, given that people are more likely to value and use technology that is simple to use (Li et al., 2007). It has been demonstrated that the direct impact of PEOU on adoption and usage behaviour is more significant than its indirect influence. In order to gain a better understanding of the topic of innovative high-tech service adoption in hotels, we linked the PEOU influence on attitudes with adoption intention to find potential links between the two constructs.

Experience

Experience and the degree to which use is voluntary regulate the UTAUT framework's construction. "Focus on advancement opportunities helps managers learn from their own experiences and make better decisions" (Yoon & Guimaraes, 1995). By looking at customers'

intents to utilize a mobile app, Rivera et al., (2015) argue that customers' experiences with technology impact their attitude. Intention to use is used as a lens through which to examine the connections between attitude, experience, and usefulness. Wherein the intention to utilize a mobile app by timeshare owners is explained by these antecedents of technology adoption: attitude, usefulness, and experience. An optimistic view of technology was more often grounded in personal experience, according to the literature.

Cost and Risk

The adoption rate of novel technology is slightly slower in larger organizations due to managers' scepticism about its application for certain jobs, in contrast to managers at smaller businesses. They worry that the increased reliance on technology may reduce the personal touch and service quality that customers have come to expect (Ivanov et al., 2020). The results of the study by Li et al., (2019) dispel concerns that technology will supplant human workers in the hospitality and tourist industries by making workers more efficient and effective. Managers' attitudes can be both hopeful and fearful; however, there is limited evidence from which to draw conclusions about how this might affect users' trust, safety, costs, and overall well-being (Gursoy et al., (2019); Cao et al., (2021); Li et al., (2019); Liang & Xue, (2009). Many publications have focused on increasing technology adoption, but they have ignored the importance of considering cost and risk. There are a number of models presented in this literature; however, Liang and Xue (2009) found that TTAT is the most often cited. In the TTAT model, the fundamental components that decide the IT users' motivation to avoid, which affects their avoidance behaviour in the end, are the perceived risks and dangers of technology as well as the efficacy, costs, and self-efficacy of protective measures. High technological prices seem to contribute to acceptance of adoption, according to research by Saengavut and Jirasatthumb (2021), which runs opposed to the intention to adopt.

Intention

Adopting new technology is incorporating it into your daily job and making full use of it (Zhi & Wang, 2023). The purpose of the study by Ivanov et al., 2020 is to determine the intention to adopt service robots. The quantitative data comes from surveys, while the qualitative data is gleaned from in-depth conversations with hotel managers. According to the results, not a single hotel has installed the service robots. Respondents who said they might implement robots in the next year or less were in the minority. Management views the use of high-tech services that facilitate the provision of information, paperwork, and payments, as well as service and

housekeeping operations, as suitable for robotization, whereas tasks pertaining to the body are not (Ivanov et al., 2018).

2.3.3 Barriers to Adoption

Managers may be cautious to adopt innovative high-tech services, despite their potential to improve numerous areas, for a variety of reasons. Reluctance to change, fear of disruption, uncertainty about return on investment, and lack of knowledge about the technology are common barriers to technology adoption. In order to overcome these challenges, proactive actions like as training programs, strong organizational support for innovation, and effective and clear communication are required. Managers can motivate their team to embrace change and new technologies by keeping communication lines open and use persuasive approaches. From a managerial standpoint, the company's failure to communicate, collaborate, and solve problems effectively could hinder attempts to implement new technologies. Technology adoption can be hindered by managers' perceptions of resistance to organizational change and the need to find suitable solutions to lessen its negative effects, as stated by Lušňáková et al., (2022). This transformation is heavily influenced by employees' attitudes about organizational change and the introduction of new practices. Lenberg et al., (2017) also touched on this topic. So, he set out to find out which major concepts have an effect on individuals. They proposed three basic concepts that might have a major impact: Important considerations include managers' awareness of the change's necessity, their comfort with the change's intended outcome, and their feeling of agency throughout the change. Consider the potential unfavourable reactions of employees while bringing new ideas. The goal is to prevent undesirable behaviours (unwillingness or dislike) (Kožárová & Sirotiaková 2018). As per study by Ivanov et al., (2020) some respondent will take personalised services over High-tech solutions, they believe that in Hospitality industry robotic technologies could not be as effective as people.

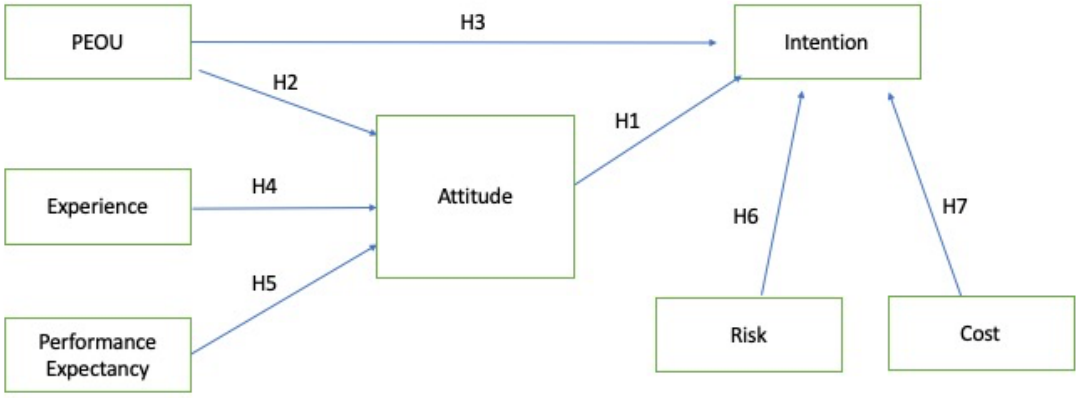

Figure 2.2: Conceptual model of attitude on adoption intention of Innovative Hi-tech Services

Source: (Author's own)

2.4 Impact on Innovation on Hotel Performance

No one in the hospitality industry was unaware of how urgent it was to Innovative hi-tech services both for hotel service providers and consumers (Marques et al., 2022). A sector that is experiencing rapid expansion globally, the hotel sector is undergoing constant diversification and expansion. Srivastava (2024) advocate that incorporating technological tools into hotels is a growing trend that is changing the way clients experience and engage with their accommodation services. It is also changing traditional hospitality practices. When it comes to improving operational efficiency and the visitor experience, technology has become an essential driver. Saengavut et al., (2021) argued that technology adoption increases economic efficiency. Prior researches have been dedicated to Innovation and technology adoption but little has been done on impact on Performance of Hotel. Innovation is very crucial to be more competitive in market. According to study by Molina-Castillo et al., (2023) that has been scant research into innovation practices in the hotel industry, and the question of how innovations affect business outcomes remains unanswered but it has positive impact on the economic sphere. It leads to success of organisation through improving product quality, enhancing productivity, decreasing costs, adapting to consumers' evolving needs, and boosting sales and profitability.

There is partial study of innovation in previous literature as, there has been a lack of proper attention to innovation performance analysis, which disregards the financial and employee outcomes of this industry. Further, in-depth research is lacking in India.

A Hotel is the one of the oldest establishments which aims to provide a variety of services for examples food, beverages, accommodation, 24-hour room services, and many utility services etc. if we summarize hotel is a type of business that primarily offers lodging, meals, and other services to people. Although many guests prefer staying at branded hotel chains due to the high quality of service they provide, guests from all over the world book rooms at the hotel and use its amenities. With rising in guest expectations, The service quality in the hospitality business is unparalleled (Ansari et al., 2023). Several elements have been brought to light by the researchers that affects the performance of an organisation and innovation is one of these factors. Hotel managers are always looking for new ways to improve their organization's performance. They love to try new techniques and use novel tools. In the hotel industry, innovation is a key factor that drives the organisational performance (Buhalis & Leung, 2018). Recently various studies have investigated the technology adopted in hotels and their impacts. Service innovation consider very critical in hotel industry for example, hotels often implement new marketing and service strategies, some of which are being impacted by technological advancements. Revenue and company performance are impacted by innovation initiatives and their results. Although there is some evidence of a positive relationship between innovation and performance, other studies have cast doubt on this claim.

There is contradiction in some studies that shows innovation efforts do not affect firm performance (Hjalager, 2010). Various constructs influencing Hotel performance with respect to adoption of technology in the hotel industry have been analysed in the recent literature. These constructs are briefly overviewed in Table 2.2.

Table 2.2: Construct examined in literature for hotel performance

Authors and date	**Brief overview**	**Constructs**
Alrawadieh et al., (2021), Munjal & Singh (2021); Mukherjee et al., (2022); Milton (2024)	Examines the role of digital transformation in revenue management in the hotel industry and its implications on financial performance.	AIHTS, FP
Buhalis & Leung (2018); Molina-Castillo et al., (2023)	Discusses IT applications as a source of competitive advantage for hotel companies	AIHTS, FP, CS

Aboelmaged (2018); Lu et al., (2016); Jeong et al., (2016)	Explores motivational drivers of knowledge sharing via enterprise social network systems and their impact on employee productivity.	AIHTS, Employee performanc e
Cheriyan et al., (2022); Buhalis & Leung (2018); Iranmanesh et al., (2022), Kaushik et al., (2015); Marques et al., (2022)	Studies consumer acceptance of AI-enabled chatbots in the travel and tourism industries.	AIHTS, CS

AIHTS: Adoption of Hi-tech Services, EP: Employee Performance, FP: Financial Performance, GS: Guest Satisfaction

Source: (Author's own)

Employee Performance

Adopting new technologies tends to boost productivity in the workplace, according to several experts. Wijaya et al., (2019) suggested that Information Technology has a significant impact on employee performance. In terms of time efficiency, information technology can substantially boost worker productivity. As a result, it lessens the burden on workers and cuts down on dishonesty and mistakes. In this study, some scholars did not prove the positive influence of IT utilization on employee performance.

Lu et al., (2016) studied from the perception of managers, Technology can improve the employee knowledge, communication and performance at lower expenses, while providing a platform for cocreation of hospitality experiences which results in optimising service quality, technology in hospitality act as a catalyst to increase operation efficiency and effectiveness (Buhalis & Leung, 2018). This is supported by various literature which advocate that hotel technologies has an impact on the systems, operations, output, and experiences (Shin et al., 2019; Decramer et al., 2013; Angioha et al., 2020). Therefore, the following hypothesis is proposed:

Enhanced Employee efficiency- Many studies suggest that Technology adoption has a positive effect on employee efficiency. For instance, Wang and Qualls (2007) states that adopting new technology systems and process helps in taking complicating decisions, increased productivity and enhance employee efficiency. Technology based utility services have collected the necessary information for employees to do their jobs, which ensure their work will be smooth, flowless and effective (Stieglitz & Brockmann 2012). Chang et al., (2013) surveyed with

managers which results in 60% believed that technology integration increase employee effectiveness, responses and retention.

Employees working in hotel feel powered with using high tech services such as information technology and consider it as factor which increase their job performance (Jeong et al., 2016). Staff output improves when important company news (both internal and external) is disseminated through technological means (Aboelmaged et al., 2018). Additionally, Shamim (2017) states that, from the view of management techniques that can foster an organization's culture of learning and innovation, and boost the adoption of new technologies Thus, the efficiency and efficacy of information technology is facilitating the employee's learning in the hospitality industry. which ultimately leads to employee learning, innovative capability and employee efficiency.

Improvement in service quality- With the rapid evolution of technology in global hospitality market, where different hotels in various parts of countries claim them as smart hotel, other hotels should aim at focusing on adopting such innovative high-tech services which impact on customers' service quality (SQ) to meet their expectations. Ansari et al., (2023) advocate that there is significant how customer happiness and loyalty are influenced by service quality, in literature studies like Chavers (2015); Leung (2019); Shin et al., (2019) advocate that hotels have digitalize their internal and external process which helps in achieving service quality and meet customer expectations. Employing technologies such as AI, VR, IT, PMS, Self-service kiosks, service robots, and CRM systems, with other services, enhances staff service while decreasing the likelihood of human mistake. Workers at restaurants and front desks, for instance, can improve efficiency and customer satisfaction with the help of new technologies. Moreover, the adoption of innovative systems increases efficiency and improves guests' service quality, as it provides reliable information to employees about the customer needs and expectations. In the studies of Ansari et al., (2023) Service quality is one of major factor that influence the guest perception and an intention to re-visit. The capacity to fulfil a guest's needs and expectations is characterized by perceived service quality (PSQ) (Lin & Su, 2003). Service quality that meets visitor expectations is measured in the hotel sector by PSQ.

Financial performance

The most frequent indicator to measure the performance of any organisation is financial performance. With addition to recent studies reveals the adoption of technology has

significantly firm's financial position by improving revenues and reducing cost (Car et al., 2020; Milton, 2024).

In hospitality, literature advocate that technology adoption investment plays the significant role in financial performance (Herath et al., 2023) and optimize revenue performance which leads to long-term profitability (Bilgihan et al., 2011). Hua et al., (2020) studied the moderating effect of technology adoption which finds the technology has negative effect on hotel's performance for a stand-alone property but it has positive impact on franchise hotel. Singh et al., (2022) relate in Indian hotel industry that technology efficiency in a hotel can influence the organizational performance if it combined with financial dimensions. The findings also supported by Sharma (2016), which share the advantages of adoption of technology that leads to increase in productivity, financial performance and guest support the positive influence of technology on hotel performance. Additionally, Mukherjee et al., (2022) advocated that technology helps in improving performance, technology adoption increase firm efficiency in variety of financial dimension such as reduced cost, increase revenue and profitability. Given such background, the following theory is advanced.

Improvement in sales revenue. Many researches support that technology helps in driving revenue growth in hotel industry (Car et al., 2020). Munjal and Singh (2021) study advocate the technology adoption change the landscape of hotel industry and going digital is the only way to move in Indian tourism and hospitality industry. More specifically, Technology like self-service kiosk, self-service technology, ICT adoption, the customer-centric procedures are substantially affected by social media platforms. which impact the market size leads to better sales growth (Kaushik et al., 2015). Chintala (2021) insist that boosting sales may be achieved through the utilization of emerging technology like AI, Blockchain and Machine learning. Jawabreh (2022) finds the due to poor website maintenance there is 50% drop in future sale owing to customers' inability to find what they want, this study supported that revenue growth rates were often higher for hotels with better technology adoption such as hotel website and mobile technology.

Cost Reduction**:** A large body of research in the hotel industry supports the idea that technological advancements can improve efficiency and effectiveness, leading to lower total process and operating costs and higher overall production. By replacing low-skilled employees with more inventive technologies, such as robots, hotels can lower their operational costs. (Iranmanesh et al., 2022). Chan et al., (2020) support this finding, hotels and other hospitality business can lower their operational costs and reduces utilities expenses. Ezzaouia and

Bulchand-Gidumal (2023) shows how using IT boosts HP by cutting expenses related to both people and non-personnel activities. The former entails implementing, for instance, an online check-in system to increase profitability while lowering staff costs. The latter includes energy and raw resources, such as energy management and kitchen control systems. Additionally, Alrawadieh (2021) advocate that with the help of AI and service automation hotels can predict occupancy rates and price on daily basis and reduce the reliance on revenue manager and also helps in cut marketing expenses which results in increase hotel revenue.

***Improvement in overall profitability*:** Several empirical studies have examined the benefits of innovative services such as IT for increase operating performance which leads to gaining of hotel's profit (Hua et al., 2020) and adjusted technology-based strategy to improve their declined profits (Liu & Yang 2021). Mitrović et al., (2021) defined profitability can be assessed through various metrics, which include operational profit, net profit, return on equity, and return on total assets. In hotels profitability can be measure by various dimension some of them are occupancy rates, restaurant turn over, reservation frequency. For instance, Iranmanesh et al., (2022) study has shown that a hotel's occupancy rate has a significant impact on its profitability. Apps for last-minute hotel reservations give users access to real-time information and advertise available rooms, increasing the hotel's occupancy rate. Ivanov et.al, (2020) state that use of technology services reduces operational costs and additional revenue generate which leads to overall profitability. Alrawadieh et al., (2021) further suggest that hotels can rely on technology in various activities in order to obtain a price edge over rivals and manage inventory at optimum profitability, which improve profitability.

Guest Satisfaction: In today's commercial world, the idea of customer pleasure is crucial. Because it is viewed as a crucial factor in boosting customer loyalty and hotel performance, customer happiness is typically regarded as a significant indicator in enterprises, This study investigates the role of technological innovations in a luxury hotel setting, it improves the perceived value of a luxury hotel and lead to better satisfaction and loyalty among guest (Shin & Jeong, 2022). In order to succeed, organizations need to consider the wants and goals of their guests. The significance of customer happiness has been repeatedly underlined by numerous scholars and experts. Customer satisfaction is important, and more research has been done in this area. Consumers want to be satisfied with every service that hotels offer. Customer pleasure has recently been overlooked, despite its relevance. The majority of service providers are aware of this, and the significance of client happiness has grown in recent years

(Ravishankar & Christopher, 2020). This is supported by the study of Li (2020) which found that technology usability is major predictor for customer satisfaction.

Standard of Service: Any company's longevity and success depend on its ability to recognize and develop service ideals. The results of a study by Park et al., (2022) comparing the customer satisfaction dimensions of self-service technology and human interaction services show that reliability, competence, efficiency, and enjoyment all have a positive impact on customer satisfaction, which in turn boosts loyalty. This effect is more pronounced when customers receive human interaction services. The study by Harif et al., (2022), Conversely, it shows how open innovation can improve service quality by incorporating its features to evaluate the hospitality industry's service delivery quality and to clarify the link between service quality and the success of hotels as a whole.

Guest Experience*:* Ravishankar and Christopher (2020) assert that customer experience reflects the extent to which a brand or business fulfils consumer wants and expectations. The primary objective of customer experience is to ensure customer satisfaction with all services; thus, it is imperative to examine the literature on customer experience. Shin and Jeong (2022) assert that a diverse array of technology-based services is essential for enhancing guest experience. Yang et al., (2021) assert that contemporary hotels employ an integrated AI service model to enhance guest experiences, while additional technologies such as IoT, mobile internet, and smart gadgets offer unprecedented service experiences and a high degree of personalization.

Return Motivation*:* Feelings of enjoyment, acceptance, ease, and contentment are all associated with customer satisfaction; happy customers are the foundation of a successful business because they foster loyalty, encourage repeat business, and spread good word-of-mouth (Ravishankar & Christopher, 2020). The study by Yang et al., (2021) helps to increase understanding the impact of technological features and services on the likelihood that future hotel visitors will. Wang et al., (2022) support this findings, characteristics of technology increase the curiosity and expectation in the customers which has the profound impact on the motivation in re-visiting the hotel.

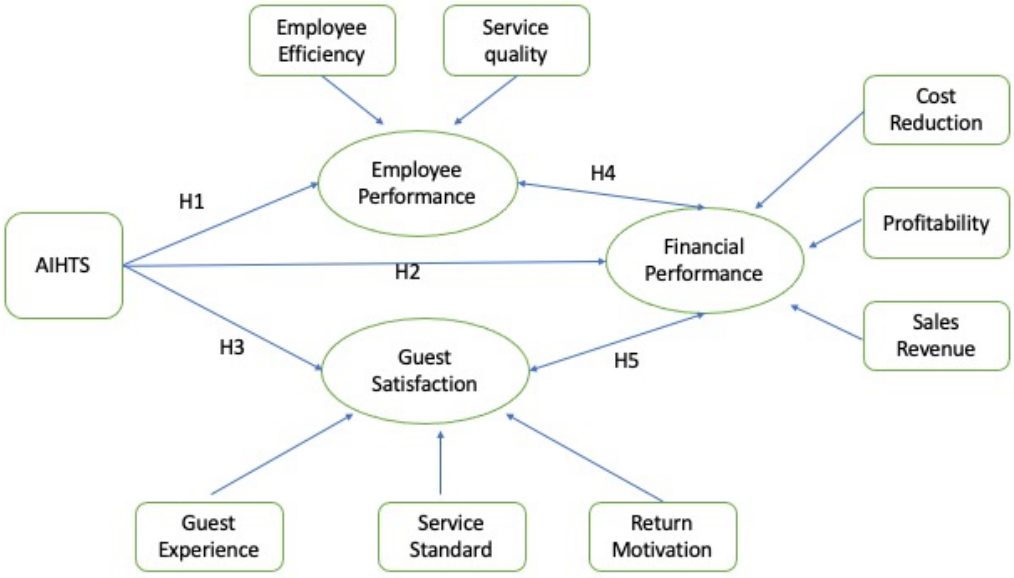

Figure 2.3: Conceptual model of study

Source: (Author's own)

2.5 Comparative Analysis of Hi-Tech Services in Delhi-NCR Hotels

The comparison of high-tech services shows how advanced technologies have a significant impact on a number of industries, most notably hospitality and tourism. Customer experiences, operational efficiency, and competitive advantage are being redefined by innovations like the Internet of Things (IoT), artificial intelligence (AI), and robotics. In emerging regions, hospitality brands are gaining influence through AI-driven tactics that improve consumer interactions and create personalised experiences (Sharma et al., 2024). Hotel operations can be optimised and a competitive advantage maintained by combining artificial intelligence with financial management, as highlighted by Milton (2024). Mercan et al., (2021) explains how the Internet of Things (IoT) may improve data management and automate visitor interactions to boost service delivery and hyper-connectivity in the hospitality industry. Nam et al., (2021) contends that the hotel sector can benefit from both increased efficiency and less labour shortages through the use of robotics and AI. These technological improvements are in line with their findings. As a result of post-pandemic pressures, these technologies have been rapidly adopted by high-end hotels, resulting in revolutionary improvements to their services. In response to operational difficulties and shifting consumer expectations, high-end hotels have shifted their focus to technological transformations, as pointed out by Bharwani and Mathews

(2021). To provide an example, as stated by Buhalis and Leung (2018), in order to provide seamless experiences for guests, smart hospitality ecosystems that use interconnection and interoperability are essential. The importance of managerial and technical advances in promoting efficiency and sustainability in the tourist industry is also highlighted by Giotis and Papadionysiou (2022). The industry's focus on improving visitor satisfaction is further demonstrated by the introduction of digital solutions, such as self-service technology and mobile applications (Li et al., 2023; Park et al., 2022). In addition to enhancing client loyalty, these technologies lessen operational bottlenecks. One of the main reasons why people are starting to use digital services is because they are looking for ways to make things better for the environment. Sustainable development can be advanced through environmentally conscious tourism and new technology, according to Song and Han (2023). Smart energy systems and automated procedures are becoming must-haves for high-end hotel chains and tour operators who want to be environmentally conscious. In addition, Sharma and Singh (2024) go into additional detail about how AI is changing the game and how it might help the hotel and tourist sectors with sustainability. According to Mukherjee et al., (2022), businesses may improve customer experiences, increase transparency, and optimise resource allocation by utilising big data analytics and blockchain technology. Obstacles such as staff reluctance, high expenses, and technical adoption persist despite the benefits. According to Ahmed (2021), the key to a smooth rollout of these technologies is training and how employees perceive them. Just as Jawabreh et al., (2022) point out, the successful implementation of information systems has a direct bearing on the financial performance of the hospitality industry. Companies should aim to strategically integrate these technologies in order to close the gap between workforce capabilities and innovation (Marr 2022). When properly applied, high-tech services transform industries by boosting service quality, operational productivity, and customer happiness; this, in turn, positions businesses for growth and sustainability in the face of intense competition.

Table 2.3: Comparative analysis of key technological services

Service/Technology	Application in Hospitality	Benefits	Challenges	References
Artificial Intelligence (AI)	Customer service (AI chatbots), predictive analysis for personalization	Enhanced customer experiences, operational efficiency, cost savings	Privacy concerns, implementation costs	Sharma et al., (2024); Milton (2024); Nam et al., (2021)
Robotics	Housekeeping, room service delivery, check-in automation	Labor cost reduction, efficiency, guest satisfaction	High initial investment, guest adaptation issues	Javaid et al., (2021); Yang et al., (2021); Wang et al., (2022)
Internet of Things (IoT)	Smart rooms, energy management systems, guest customization	Improved energy efficiency, personalized services	Cybersecurity risks, infrastructure readiness	Mercan et al., (2021); Buhalis & Leung (2018)
Augmented Reality (AR)	Virtual tours, immersive marketing content	Increased engagement, improved decision-making	High cost of development, technical glitches	Arghashi & Yuksel (2022); Sharma et al., (2024)
Big Data Analytics	Guest behavior prediction, dynamic pricing	Revenue optimization, improved targeting	Data integration complexity, privacy issues	Alrawadieh et al., (2021); Hua et al., (2020)

Self-Service Technology	Check-in/out kiosks, digital concierge	Reduced wait times, improved efficiency	Limited human interaction, tech barriers	Park et al., (2022); Kaushik et al., (2015); Li (2020)
Smart Hospitality	Integrated technology platforms, smart rooms	Enhanced interconnectivity, guest satisfaction	High dependency on tech systems, security risks	Buhalis & Leung (2018); Liu & Yang (2021)
Blockchain	Secure payment systems, loyalty programs	Improved transparency, reduced fraud	Adoption complexity, regulatory issues	Chintala (2021); Mukherjee et al., (2022)
Virtual Reality (VR)	Virtual property tours, virtual guest experiences	Increased booking rates, immersive marketing	High cost, limited user accessibility	Sharma & Singh (2024); Sharma et al., (2024)

Source: (Author's own)

2.6 Emerging Hi-Tech Services in Delhi-NCR Hotels

The hospitality sector is undergoing a revolutionary shift thanks to emerging high-tech services in hotels in the Delhi-National Capital Region (NCR). These services integrate state-of-the-art technologies that improve operational efficiency, client satisfaction, and service delivery as a whole. The room division departments of five-star hotels in the area have embraced innovative tools including smart room controls, Internet of Things (IoT)-enabled devices, and automated systems in response to the rise of smart technology (Singh et al., 2023). Guests now have access to more tailored experiences thanks to this digital revolution, which has also improved resource optimisation. A key component of this development has been ICT, which has allowed hotels to better handle client feedback, payments, and reservations (Aggarwal et al., 2016). One factor

that has helped these technologies integrate so smoothly is the growing trend of mobile learning among hotel personnel; this trend guarantees that workers are prepared to make the most of these advancements (Pande & Bose, 2018). Employee training programs are making use of augmented reality (AR), a prominent emerging technology, to enhance staff capacities to deliver excellent services (Mathur, 2023).

Artificial intelligence (AI) has also helped hotels in the Delhi-National Capital Region (NCR) improve their tactics for engaging customers. Chatbots, predictive analytics, and robotic assistants are among of the AI-enabled solutions that are being used more and more to streamline repetitive processes and meet the requests of guests in real-time (Sharma et al., 2024). Additionally, the Internet of Things (IoT) has a revolutionary impact on operational efficiency and guest convenience through hyper-connectivity. This is because IoT devices link different hotel amenities to give clients seamless control (Mercan et al., 2021). Hotels in the Delhi-National Capital Region have been more active users of automation and robotics, improving the use of industry 4.0 in both back-end processes and front-end interactions with customers (Javaid et al., 2021). Robotic cleaning systems, digital concierge services, and computerised check-ins are just a few examples of how technology is revolutionising the hospitality industry. At the same time, hotels may now use cloud computing and big data analytics to learn more about their guests' tastes, which allows them to provide more tailored service (Sharma & Singh, 2024). In a highly competitive market, the use of AI-driven strategies has revolutionised luxury offering services that result in higher levels of customer happiness and loyalty (Shin & Jeong, 2022).

These hotels are also using augmented reality apps and mobile tech to improve operational agility and client engagement. Guests can enhance their overall travel experience with augmented reality applications that allow them to digitally preview hotel amenities and local attractions (Arghashi & Yuksel, 2022). In contrast, mobile technology have improved the hotel booking procedure, service request workflow, and guest-staff communication (Bilgihan et al., 2011). Inns are better able to cater to customers customers, who are increasingly looking for contactless services and better hygienic products, by strategically using these technologies (Bharwani & Mathews, 2021).

Table 2.4: Analysis of emerging hi-tech services in hotels

Emerging Hi-Tech Service	Description	Source
Artificial Intelligence (AI)	AI-based solutions like chatbots, automated check-ins, and personalized recommendations for guests.	Sharma et al., (2024); Nam et al., (2021); Milton (2024).
Internet of Things (IoT)	Hyper-connected devices managing energy, lighting, and room automation for enhanced guest comfort.	Mercan et al., (2021); Buhalis & Leung (2018); Sharma & Singh (2024).
Robotics	Deployment of service robots for housekeeping, room delivery, and concierge services.	Javaid et al., (2021); Nam et al., (2021); Wang et al., (2022).
Mobile Technologies	Mobile check-ins, keyless entry, and customized service applications via smartphones.	Pande & Bose (2018); Jeong et al., (2016); Car & Stifanich (2020).
Big Data Analytics	Utilizing guest data for insights to improve services, loyalty programs, and operational efficiency.	Milton (2024); Sharma (2016); Iranmanesh et al., (2022).
Cloud Computing	Cloud-based Property Management Systems (PMS) for seamless operations and remote access.	Sharma & Singh (2024); Singh et al., (2023); Wijaya et al., (2019).
Virtual Reality (VR)	Immersive experiences like virtual hotel tours and event planning previews.	Arghashi & Yuksel (2022); Sharma & Singh (2024); Song & Han (2023).
Blockchain Technology	Securing payment systems, improving transparency in bookings, and managing loyalty programs.	Chintala (2021); Mukherjee et al., (2022); Sharma & Singh (2024).
Smart Room Automation	Integrating voice assistants, climate control systems, and entertainment hubs.	Buhalis & Leung (2018); Nam et al., (2021); Marques et al., (2022).

Revenue Management Tools	AI-driven pricing strategies and dynamic room pricing to optimize occupancy and profitability.	Herath et al., (2023); Alrawadieh et al., (2021); Roy & Pagaldiviti (2023).
5G Connectivity	Providing high-speed internet services for business travelers and IoT applications.	Sharma et al., (2024); Ziyae et al., (2022); Bilgihan & Ricci (2024).
Self-Service Technologies (SSTs)	Contactless kiosks for check-ins, check-outs, and payment systems.	Park et al., (2022); Sharma (2016); Li (2020).
Smart Hospitality Ecosystem	Integration of interoperable systems to create seamless guest experiences and improved operations.	Buhalis & Leung (2018); Sharma & Singh (2024); Yang et al., (2021)
Augmented Reality (AR)	AR-based training for hotel staff and enhancing guest experiences like virtual tours.	Mathur (2023); Arghashi & Yuksel (2022); Sharma et al., (2024)

Source: (Author's own)

Incorporating these new high-tech services has revolutionised the hospitality industry in Delhi-National Capital Region, improving operational efficiency and the overall consumer experience. Embracing AI, IoT, AR, and other technologies has allowed hotels to stay ahead of the competition, meeting the expectations of modern travellers with personalised services that are technologically advanced (Nam et al., 2021; Sharma & Singh, 2024). Considering how rapidly the sector is changing, these innovations will definitely be pivotal in determining how the region's hospitality business is shaped in the future.

2.7 RESEARCH GAP

The current literature regarding the adoption of innovative Hi-Tech services in the hospitality sector primarily emphasises global viewpoints, thereby creating a significant gap in region-specific research, especially concerning hotels in Delhi-NCR (Singh et al., 2023; Aggarwal et al., 2016; Pande & Bose, 2018). Technological advancements, particularly Artificial Intelligence (AI), have been widely studied for their potential to improve customer satisfaction and operational efficiency (Sharma et al., 2024; Nam et al., 2021). However, research on other

high-tech services, such as augmented reality, IoT, and mobile learning, is comparatively scarce (Mathur, 2023; Mercan et al., 2021; Arghashi & Yuksel, 2022). Furthermore, existing research predominantly focusses on guest perspectives regarding technology adoption and satisfaction (Shahid & Paul, 2022; Shin & Jeong, 2022), while there is a paucity of investigation into managerial attitudes towards the implementation of innovative technologies and their strategic implications for hotel performance (Bilgihan & Ricci, 2024; Sharma & Singh, 2024). Moreover, although global research emphasises the significance of smart and interconnected technologies in enhancing revenue and competitiveness (Buhalis & Leung, 2018; Milton, 2024), regional variations in technological infrastructure and guest preferences remain inadequately explored. This presents an opportunity to examine the comparative adoption of high-tech services in hotels within the Delhi-NCR region and evaluate their effects on performance, while integrating managerial perspectives to address this research gap.

2.8 SUMMARY

This chapter provides a summary of the literature review on several aspects of attitude, intention, and hotel performance. The impact of adopting innovative hi-tech services on these previously studied variables was analysed. Secondary data for this study was provided by the literature review on technology adoption in the hotel industry, which focused on the types of technology, how they affect management attitudes, and how they affect hotel performance. The literature review on the linkages provided the theoretical underpinning for the current investigation.

CHAPTER - 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

The methodology of research acts as the foundational structure for executing research activities and is the means through which theories are developed (Mohajan, 2018). The methodology of research is a systematic investigation that employs various techniques to explore the research topic. Furthermore, several prevalent techniques utilized to evaluate research challenges are examined, along with the reasoning that supports their use. The individual must possess a strong understanding of research methodologies and procedures, alongside methodology itself. Simply having the ability to calculate mean, mode, median, standard deviation, chi-square, or to create specific indices or tests, or to apply certain research methods, is not enough for those in the field. Furthermore, it is essential to grasp the fundamental assumptions underlying different techniques. The standards used to distinguish between approaches and methodologies that are appropriate and those that are not for a specific issue. All of this indicates that one should customize their method to the specific topic being studied, as different issues may require distinct approaches (Kothari, 2004). This chapter provides an overview of the techniques and approaches employed to achieve the primary objective of the study. The methods employed to reach the objectives of the study are grounded in established practices for scientific inquiry.

A review of the literature facilitated the formulation of the research's primary objectives. The research's key objectives were established by a literature evaluation. Rajasekar et al., (2013) stated that research methodology is a methodical approach to addressing problems. It is a discipline that analyzes optimal methodologies for executing research. The approaches utilized by scientists to analyze, interpret, and forecast phenomena are generally known as research methodologies. It may also involve investigating the methodology of obtaining information. The primary objective of the research work plan is its providing. Goundar (2012) asserts that a researcher must formulate a research strategy for the selected problem. It is important to note that although the study approach employed for both themes is identical, the research techniques may vary. The researcher must understand the technique and the specific research procedures required for the task.

This chapter is broadly categorized into the following sections:

- **Statement of Research Problem**
- **Objectives of the study**
- **Development of Research hypothesis**
- **Research design and Methodology**
- **Survey Approach**
- **Research Questionnaire Design**
- **Content Validity**
- **Face Validity**
- **Pilot Study**
- **Summary**

3.2 Statement of Research Problem

This study examines many factors related to attitude and its impact on intention other than this study also examines the dimension of hotel performance in 5-star deluxe and 5-star hotels. Ellis & Levy (2008) assert that a comprehensive articulation of the research challenge is a fundamental aspect of research. As a starting point, the research problem informs the relationships among the various components engaged in research. Research can be effectively organized and executed when the research problem is well specified. All efforts, resources (financial and temporal), and time will be squandered if the problem is inadequately defined.

Research Questions:

- To what extent have 5-star hotels in Delhi-NCR adopted various Hi-Tech services?
- What are the attitudes of hotel managers towards the adoption of IHTS?
- How does the adoption of Innovative High-Tech Services (IHTS) impact the performance of 5-star hotels in Delhi-NCR?

Figure 3.1 illustrates the interconnection of the problem-based research cycle, highlighting the significance of the research challenge to the entire project.

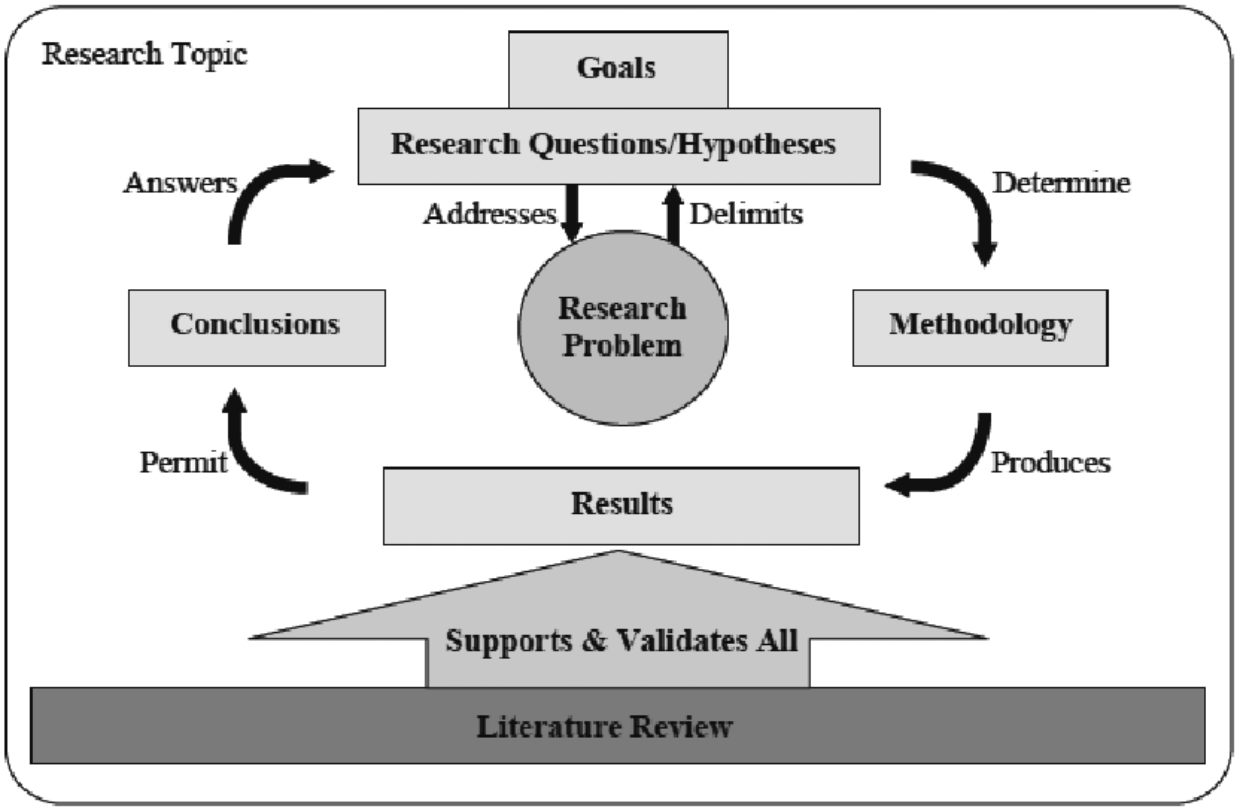

Figure 3.1: Conceptual Diagram for the Problem-Based Research Cycle

Source: (Ellis & Levy, 2008)

3.3 OBJECTIVE OF THE STUDY

This study aims to examine the influence of Innovative High-Tech Services (IHTS) on the performance of five-star deluxe and five-star hotels in Delhi-NCR. The study specifically seeks to analyze the correlation between the implementation of IHTS and critical performance metrics, including employee performance, service quality, financial performance, customer happiness, and visitor experience. The study will examine hotel managers' opinions regarding the adoption of IHTS and determine the elements that play a role in shaping their choices. By clarifying these connections, our study hopes to provide substantial insights for hotel managers, legislators, and industry players to enhance technology utilization and overall performance at hotels in Delhi-NCR.

The objectives of this study are addressed here are as follows;

1. To study various innovative Hi-Tech Services adopted in Hotels in Delhi-NCR.
2. To assess the attitude of Managers for the adoption of Innovative Hi-Tech Services.
3. To examine the impact of Innovative Hi-Tech Services on Hotel Performance.

4. To compare the Innovative Hi- Tech Services among the Hotels of Delhi-NCR.
5. To suggest the measures for the improvement of innovative Hi-Tech services in Hotels in Delhi-NCR.

3.4 DEVELOPMENT OF RESEARCH HYPOTHESIS

This study aims to examine the impact of adopting innovative high-tech services on hotel performance. Furthermore, to assess the relationship between the implementation of IHTS and the perspectives of hotel managers.

Based on the detailed literature reviews, following variables have been formulated which are as follows:

Managerial Attitudes Towards IHTS:

- Perceived Ease of Use
- Experience
- Performance Expectancy
- Attitude
- Intention
- Cost
- Risk

Impact of IHTS on Hotel Performance:

- AIHTS
- Employee Productivity

⇒ Employee Performance

⇒ Service Quality

- Financial Performance

⇒ Cost Reduction

⇒ Sales Revenue

⇒ Profitability

- Customer Satisfaction

⇒ Service Standard

⇒ Guest Experience

⇒ Return Motivation

Finally, the hypotheses were developed as follows;

Managerial Attitudes Towards IHTS:

H1: Attitude has a positive direct effect on the intention to adopt Innovative High-tech Services.

H2: Attitude is positively impacted by PEOU about Innovative High-Tech Services.

H3: The intention to use innovative high-tech services is positively impacted by PEOU.

H4: Experience has a positive direct effect on attitude toward Innovative High-tech Services.

H5: Experience has a positive direct effect on attitude toward Innovative High-tech Services.

H6: Risk directly affects the intention to adopt.

H7: The cost of implementation has a direct effect on the desire to adopt.

Impact of IHTS on Hotel Performance:

Hypothesis 1(H1). There is a significant impact of Adoption of IHTS on employee performance in hotels.

H1a: There is a significant impact of service quality on employee performance

H1b: There is a significant impact of employee efficiency on employee performance

Hypothesis 2(H2). There is a significant impact of Adoption of IHTS on financial performance in hotels.

H2a: There is a significant impact of sales revenue on financial performance

H2b: There is a significant impact of cost reduction on financial performance

H2c: There is a significant impact of profitability on financial performance

Hypothesis 3(H3). There is a significant impact of Adoption of IHTS on Guest Satisfaction in hotels.

H3a: There is a significant impact of customer experience on guest satisfaction

H3a: There is a significant impact of return motivation on guest satisfaction

H3a: There is a significant impact of service standard on guest satisfaction

Hypothesis 4(H4). There is a positive relationship between the employee performance and financial performance

Hypothesis 5(H5). There is a positive relationship between the financial performance and guest satisfaction in hotels.

3.5 RESEARCH DESIGN AND METHODOLOGY

Research Design: To align with the study's objectives, parameters for data collecting and analysis are established. Furthermore, research design serves as the conceptual framework that governs the research process and guides the measurement, collection, and analysis of data. Consequently, the design comprises a comprehensive plan that delineates each step undertaken by the researcher for this study, which includes:

- Purpose of the study
- Research hypothesis
- Population and sample
- Method of data collection
- Data analysis techniques

Furthermore, the considerations made in terms of design pertain to;

- What topic is being studied?
- What is the purpose of the study?
- In what location will the study be conducted?
- What kind of information is necessary?
- Where can I locate the necessary data?
- What time spans will be covered by the study?
- How will the sample design be created?

- What methods of gathering data will be employed?
- How are the data going to be examined?
- How will the report be formatted?

Research Methodology: Research technique is a systematic strategy to addressing the research topic. It conducts a scientific and logical investigation utilizing the methodologies employed by the researcher in the study. This document examines the several methodologies frequently employed by researchers to assess research problems and the rationale underlying them. The researcher must be cognizant of both the plan and the research methodologies/techniques.

The research process used in the study included the following steps;

- Literature Review
- Variable Operationalization
- Sampling Design
- Data Collection
- Investigation of Data
- Data Analysis

3.5.1 Literature Review

The literature review explored prior studies investigating the influence of innovative high-tech services on hotel performance, concentrating on employee performance, service quality, financial performance, customer satisfaction, and guest experience. The review examined the factors affecting managers' opinions regarding the adoption of various technologies, including perceived simplicity, perceived practicality, and backing from within the company. This study aims to shed light on the complex connection between hotel performance and technology adoption within the framework of 5-star hotels in Delhi-NCR by synthesizing existing knowledge.

3.5.2 Variable Operationalization

The implementation of variables was grounded in an extensive review of existing literature. The independent variable, "Adoption of Innovative High-Tech Services (IHTS)," was defined through a collection of items evaluating the degree to which hotels have integrated particular technologies, including mobile check-in, AI-driven chatbots, and IoT devices. The dependent

variables, such as employee performance, financial performance, and customer satisfaction were defined through a blend of quantitative and qualitative measures. The assessment of face validity for the measurement items was conducted to confirm that they effectively represented the intended constructs.

3.5.3 Sampling Design

The sampling design serves as an effective and flexible method for collecting data in the context of legal research. When examining the entirety of the universe or a population for a particular goal presents challenges, it complicates the process, leading to the necessity of selecting a sample or a specific percentage of the population. The segment of the procedure known as the sample is identified as the sampling method. This methodology is utilized in both the social sciences and legal studies. The main objective of sample drawing is to derive conclusions regarding the broader population based on the sample. To select a sample from the overall population, certain essential criteria need to be fulfilled (Jawale, 2012).

Types of Sampling Technique: understanding sampling and the rationale behind the methods employed to select samples is essential. The process involves choosing a subset from a specified sampling frame or the entire population. Before choosing a specific sampling method, it is essential to first select a broad sampling technique (Alvi, 2016; Kothari, 2004). Figure 3.2 illustrates the various types of sampling techniques.

Simple random sampling: Every unit has an equal opportunity for inclusion in the sampling process. This approach provides a more unbiased and enhanced estimation of the parameters for a uniform population. In the case of a homogeneous population, this method provides an unbiased and more accurate estimation of the parameters. In scientific investigation, simple random sampling is a commonly employed sampling method. In the context of research, individuals from highly uniform communities are selected randomly by the investigators. In simple random sampling, each individual within a population possesses an identical probability of being chosen as a response. Simple random sampling is often employed in surveys and quantitative research designs (Golzar & Noor 2022).

Systematic sampling: Systematic sampling entails selecting every k-th individual from a population list following the selection of a random beginning point. It is more efficient and expedient than ordinary random sampling, particularly for extensive populations. For example,

if a researcher intends to choose 50 volunteers from a pool of 500, they can commence with the 5th individual and thereafter select every 10th individual afterward.

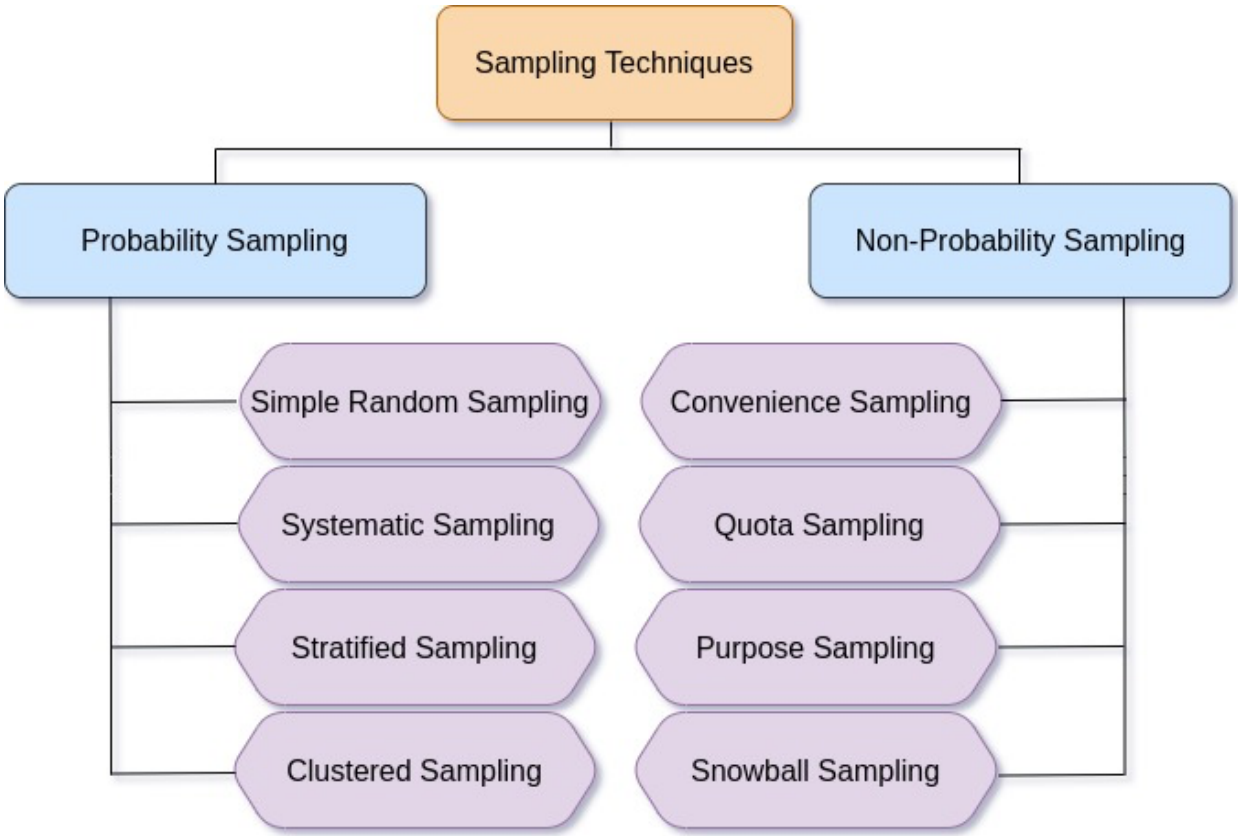

Figure 3.2: Sampling Techniques

Source: (Kothari, 2004)

Stratified sampling: Stratified sampling categorizes the population into specific subgroups or strata according to common attributes such as age, gender, or wealth. Subsequently, random samples are extracted from each subgroup either proportionately or uniformly. This approach guarantees sufficient representation of each subgroup. For instance, in an investigation of consumer preferences, a hotel might categorize guests by their vacation objectives—business and leisure—and conduct a random sampling from each group.

Clustered Sampling: Cluster sampling entails partitioning the population into clusters, typically determined by geographical or institutional factors. Rather than picking individuals from the entire population, the researcher randomly selects complete clusters and subsequently surveys everyone or a subset of members inside those clusters. This approach is economical

and feasible for extensive, scattered populations. A tourism board may randomly select specific cities (clusters) and survey all hotels within those locations.

Quota Sampling: Quota sampling is employed to guarantee the representation of specific traits within the sample, however the selection within each category is non-random. Researchers categorize the population (e.g., by gender, age) and fulfill quotas for each category. A hotel brand may guarantee that 50% of responders are female and 50% are male, without employing random selection methods.

Purpose Sampling: Purposive sampling entails the selection of individuals based on particular features or objectives pertinent to the investigation. This approach is beneficial when examining a certain skill or characteristic. Interviewing solely hotel managers to comprehend strategic decisions in hospitality operations exemplifies purposive sampling.

Snowball Sampling: Snowball sampling is employed to access elusive or concealed populations. Current participants enlist prospective participants from their own networks. This approach is frequently employed in qualitative research or for delicate subjects. For instance, in researching informal independent tour guides, first connections may facilitate the identification and connection with further individuals.

Convenience Sampling technique: Which entails selecting a sample from the population that is readily accessible, convenient, or nearby. This method is also known as grab, incidental, or opportunity sampling. This is a non-probability sampling method utilized to gather data from a sample of respondents that is easily accessible and available. The justification for convenient sampling lies in the substantial sample size, which ensures that the results remain unbiased. The sampling method necessitates that participants are both willing and capable of engaging; there are no further prerequisites. Moreover, given that consent for participation is essential for this sampling method, there is no necessity to establish a fundamental random sample (Obilor, 2023; Singh & Masuku, 2014). Convivence sampling technique is used for this study.

3.5.4 Data Collection

Primary data When we talk about primary data, we're referring to information that has just been acquired. The individual devised it to address the research problem. The study utilized the survey approach, employing well-structured questionnaires to collect primary data.

Secondary data refers to information that has previously been collected, subjected to statistical analysis, and utilized by researchers in their studies. Primary data were comprehensively collected following the study of secondary data.

The secondary data sources are;

- Hotel brochures and websites
- Periodicals and journals
- Books
- Newspapers and magazines
- Online articles
- HRACC and Hotel Association of India website

In the process of collecting data for testing of hypothesis, list of approved by ministry of tourism, govt. of India (National Database for Accommodation Units) in Table 3.1 was approached to collect the data from the employees of 5- star and 5- star deluxe hotels in the Delhi NCR.

Table 3.1(a): List of Hotels

Sr. No.	**Five star deluxe**
1	Hotel Welcome Sheraton, Delhi
2	The Oberoi, New Delhi
3	ANDAZ DELHI (UNIT OF JUNIPER HOTELS PRIVATE LIMITED)
4	ITC MAURYA
5	LE MERIDIEN NEW DELHI
6	SHANGRI-LA'S EROS HOTEL
7	THE GRAND NEW DELHI
8	Hyatt Regency Delhi
9	Roseate House,
10	JW MARRIOTT HOTEL
11	Radisson Blu Plaza Hotel
12	Eros Hotel
13	The Oberoi Gurgaon
14	Trident, Gurgaon

15	LE MERIDIEN GURGAON, DELHI NCR
16	Taj City Centre, Gurugram
17	Hyatt Regency Gurgaon
18	The Leela Ambience Gurugram (Ambience Hotels and Resorts Pvt.
19	JAYPEE GREENS GOLF & SPA RESORTS, Greater Noida,
20	THE LEELA AMBIENCE CONVENTION HOTEL, DELHI
21	THE LEELA PALACE, NEW DELHI
22	Taj Palace New Delhi
23	The Ashok Hotel
24	The Park New Delhi
25	Jaypee Vasant Continental
26	The Metropolitan Hotel
27	THE LODHI UNIT OF LODHI PROPERTY COMPANY LIMITED

Source: (Ministry of Tourism, 2023)

Table 3.1(b): List of Hotels

Sr. No.	Five-star
1	AMBASSADOR, NEW DELHI
2	The Claridges Hotel
3	Hotel Seven Seas
4	Maidens Hotel
5	Park Plaza
6	Hotel Aloft
7	Crowne Plaza, Greater Noida,
8	Radisson, Noida
9	Vivanta by Taj Surajkund
10	ANYA HOTEL, Gurugram
11	CROWNE PLAZA HOTEL, Gurugram
12	COURTYARD BY MARRIOTT GURUGRAM
13	The Gateway Resort Damdama Lake Gurgaon
14	Heritage Village Resort Spa, Gurugram

Source: (Ministry of Tourism, 2023)

Sample size: The universe of the study will constitute of Managers who is working in the upscale hotels in the National Capital Region. The hotels falling in the 5-star and 5-star deluxe category will be selected as per the reports of Ministry of Tourism, Govt. Of India. As per the report of categories and state wise classified hotels which is downloaded from the Ministry of Tourism, India website there are 41 Hotels (Ministry of Tourism, Govt. of India, 2023). Therefore, Managers are considered as universe From the universe of 41 hotels, the sample size of 5-star and 5-star deluxe hotels in Delhi NCR will calculate by using online sample size calculator given on webpage with address http://www.raosoft.com/samplesize.html. A total of 13985 rooms can be found in 41 hotels. In Delhi, the vacancy rate has been 75.1% in recent years (Statista, 2023); this means that there are 5,50994 people living there. Acharya et al., (2013) advocate that it would take too much time and money to poll the whole community for one study. A "sample" is also a group that is big enough to be representative of the whole community. Kwong and Wong (2015) say that at least 200 examples are needed for multivariate studies that use structural equation modelling to get the best results. A poll with a sample size of about 385 people was used for this study. There is a 95% confidence level, a 0.5 standard deviation, and a ± 5% confidence range (Raosoft, 2004).

3.5.5 Investigation of Data

The data were scrutinized for inaccuracies following the survey. Subsequent to the completion of coding and editing, the data underwent pretesting to ascertain its suitability for the study's examination. The data was input into the SPSS software to facilitate further research analysis.

3.5.6 Data Analysis

It is the process of methodically employing statistical methods to examine and interpret data collected from respondents. This study utilized SPSS, SmartPLS, and Microsoft Excel. The statistical techniques defined in Table 3.2.

Table 3.2: Tools used for data analysis of study

S.No.	Objectives	Hypothesis	Statistical Analysis
1	To study various innovative Hi-Tech Services adopted in Hotels in Delhi-NCR	----	Descriptive Statistics (Frequency, Mean, Percentages)

2	To assess the attitude of Managers for the adoption of Innovative Hi-Tech Services	There is a significant impact on attitude of Managers for the adoption of Innovative Hi-Tech Services	Structure equation modelling (SEM) framework
3	To examine the impact of Innovative Hi-Tech Services on Hotel Performance	There is a significant impact of innovative Hi-tech Services on Hotel Performance	Structure equation modelling (SEM) framework
4	To compare the Innovative Hi- Tech Services among the Hotels of Delhi-NCR	There is a significant difference in the adoption of Innovative Hi-Tech Services among 5-star hotels in Delhi-NCR.	Descriptive Statistics (Frequency, Mean, Percentages)
5	To suggest the measures for the improvement of innovative Hi-Tech services in Hotels in Delhi-NCR.	----	----

Source: (Author's own)

Descriptive statistics: Descriptive statistics employ measures of dispersion, including variance, standard deviation, and range, alongside measures of central tendency, such as mean, median, and mode, to delineate the prominent features of the data. Consequently, data can be precisely summarized and represented using graphs, tables, and charts. For instance, we possess the grades of one thousand students and seek to understand their overall performance, along with the distribution and variance of their marks. Descriptive statistics enable us to define our facts in the most pertinent and intelligible manner. It comprises succinct summaries of the sample and the observations conducted. These summaries are statistical and provided as simply comprehensible graphics. Within the framework of an extensive statistical analysis, these summaries may function as the basis for the preliminary characterization of the data, or they may suffice independently for a particular study. The scientific method central to statistics encompasses information gathering, organization, analysis, and interpretation for descriptive and decision-making objectives.

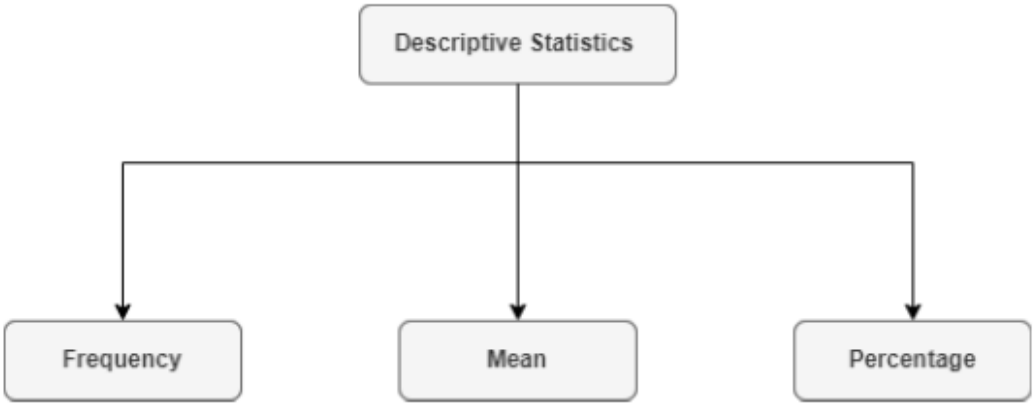

Figure 3.3: Descriptive Statistics

Source: (Kothari, 2004)

Inferential statistics: The methodology of deriving conclusions on populations based on sample data is referred to as inferential statistics. It enables us to deduce information regarding the entire collection, including particular instances within it, by utilizing data from a subset of examples. These conclusions are based on evidentiary principles and depend on sample data to draw broader inferences. The precision of inferential statistics is heavily reliant on the validity of the sample data and its representativeness of the overall population. Furthermore, inferential statistics facilitates the derivation of conclusions and the formulation of predictions based on a dataset. It is conducted using various methodologies, protocols, and types of computations. Inferential statistical tools encompass chi-square tests, regression analysis, analysis of variance (ANOVA), hypothesis testing, and confidence intervals.

In this study, the following statistical tools are used to test the hypothesis:

Pearson correlation coefficient: The Pearson correlation coefficient shows that correlation coefficients can be different sizes and can go in either a positive or negative way connection coefficients go from -1 to +1; -1 and +1 stand for completely inverse and positively correlated variables, correspondingly. A coefficient of 0 means that there is no connection. If the correlation value is less than zero, it means that when one variable goes up, another variable goes down. This is called a negative relationship.

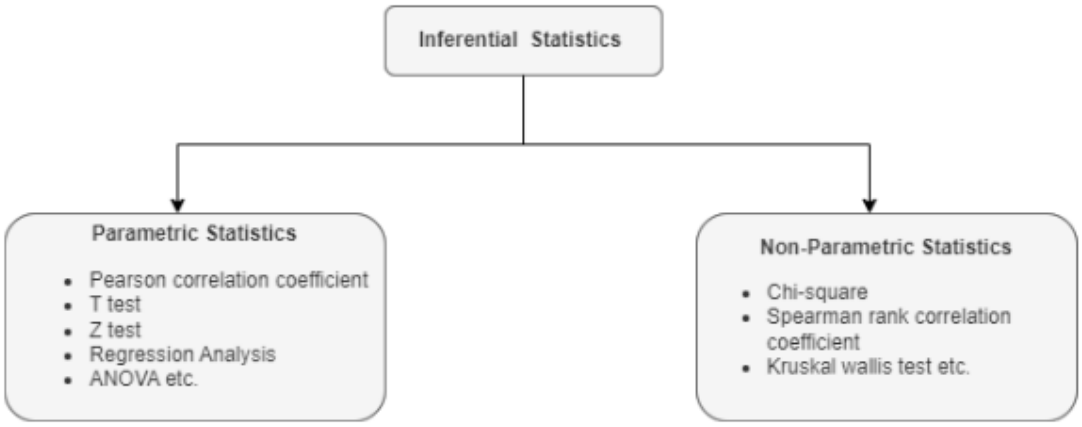

Figure 3.4: Inferential Statistics

Source: (Olaide Wasiu, 2018; Alacaci, 2004)

Regression analysis It looks at how one dependent variable (something that is noticed) is related to one or more independent variables (things that explain what happened), suggesting a causal connection. Regression transcends correlation by deducing links between variables, facilitating the modelling of causal connections, and forecasting the value of the dependent variable based on specified independent variables (Shi & Conrad, 2009). All forms of regression depend on assumptions on the relationship among the variables. Consequently, it is crucial to comprehend the accurate interpretation of the data and the assumptions inherent in the regression model employed. Accurately selecting predictor variables is essential, as regression will invariably establish a correlation, irrespective of any causal relationship between the variables. A big P-value (> 0.05) indicates that the explanatory variable does not significantly affect the dependent variable.

3.6 SURVEY APPROACH

The phrase "survey approach" denotes a set of methodologies that prioritize quantitative analysis. Statistical methods are employed to examine data gathered from numerous organizations through mail questionnaires, telephone interviews, or public statistics. The survey methodology seeks to identify relationships prevalent across all businesses by examining a representative sample, hence facilitating generalizable conclusions about the

study's topic. The survey methodology was selected for hypothesis testing in this research project. Survey research methodologies provide an economical, swift, accurate, and efficient means of evaluating respondent data (Gable, 1994). Survey research involves the collection of data via surveys distributed to participants by researchers. The survey data is statistically analysed to yield important study findings. Survey research is commonly defined as a quantitative methodology that gathers data from a sample of respondents through a series of survey questions. This form of research encompasses participant recruiting, data gathering, and analysis. This may benefit researchers aiming to inform their subjects about novel traits or trends. The majority of research initiatives consist of data collection regarding facts, behaviours, and attitudes. The identical data can be acquired by a survey methodology that integrates qualitative and quantitative techniques (Kothari, 2004). Numerous research methodologies exist. Survey research employs three principal types: exploratory, descriptive, and causal. Mathiyazhagan (2010) classified the data gathering methodologies employed in survey research into distinct groups.

- Personal interview
- Mail questionnaire
- Panel
- Telephone
- Observation

The investigators indicate that the predominant methods utilized are mail questionnaires and in-person interviews. Students often exhibit confusion or an inability to distinguish between the questionnaire and the interview schedule. Survey research is considered a form of social science inquiry that focuses on individuals, their fundamental life data, and their attitudes, beliefs, and actions (Kerlinger, 1973).

3.7 RESEARCH QUESTIONNAIRE DESIGN

A questionnaire is a written instrument with questions and other components designed for data analysis. Moreover, the study methodology is analogous to the utilization of a questionnaire or a series of inquiries. The research questions are meticulously formulated to elicit responses related to the chosen variables for study (Roopa & Rani, 2012).

Questionnaire was developed in following four parts;

Part 1 – Demographic Profile

Part 2- Technology Adopted

Part 3 – Manager Attitude

Part 4 – Hotel Performance

3.7.1 Types of questionnaires

According to (Khalid, 2012), stated that an instrument to gather data from respondents is a questionnaire. While it's a productive method of gathering information, the researcher needs to be clear about what's needed and how to quantify the relevant variables. Conducting a literature search on validated questionnaires that have been used before and can be administered in similar settings to capture variables that are relevant to the study hypothesis is always advised as a first step.

Furthermore, questionnaires are broadly classified into two categories:

Structured: Structured surveys incorporate pre-coded questions with explicit skip patterns to guarantee that respondents answer in the appropriate sequence. Predetermined questionnaires are predominantly employed in quantitative data collection initiatives. Inconsistencies are diminished; these organized questionnaires are user-friendly, replies are uniform, and data administration is streamlined. Conversely, participants in closed-ended inquiries must choose from a predetermined set of responses. The response may select multiple options or may be mutually exclusive.

Unstructured: Unstructured surveys sometimes incorporate open-ended and unclear opinion questions. Questions may not always be articulated as interrogatives, necessitating clarification from the moderator or enumerator regarding their intent. This type of questionnaire is utilized in focus groups. Respondents may answer open-ended questions in whatever manner they like. This style is more effective for continuous variables, such as patient weight, when numerous possibilities exist, making it impractical to pre-record every response.

Kothari (2004) defines a questionnaire as a compilation of multiple questions arranged in a specific sequence on a form or a series of forms. The respondents receive the questionnaire by mail; they are required to review it, comprehend the questions, and indicate their answers in the designated areas on the form. Respondents must furnish their own answers to the enquiries.

3.8 CONTENT VALIDITY

The word "content validation" refers to a process employed to ensure that a scale, questionnaire, or checklist effectively measures the intended content. Evaluating the importance of each item inside an instrument by a panel of experts is a strategy for achieving content validity. Lawshe's method has been widely employed to establish and assess content validity across various fields, including market research, organisational development, healthcare, and personnel psychology (Wilson et al., 2012).

Content Validity Ratio (CVR), items are rated into one of three categories by a panel of "experts" on the subject matter: "essential," "useful, but not essential," or "not necessary." Items that are included in the final instrument after being judged "essential" by a sufficient number of panel experts; those that fall short of this threshold are eliminated (Lawshe, 1975).

Panel Size	$N_{critical}$ (Minimum Number of Experts Required to Agree an Item Essential for Inclusion)	Proportion Agreeing Essential	$CVR_{critical}$
5	5	1	1.00
6	6	1	1.00
7	7	1	1.00
8	7	.875	.750
9	8	.889	.778
10	9	.900	.800
11	9	.818	.636
12	10	.833	.667
13	10	.769	.538
14	11	.786	.571
15	12	.800	.600
16	12	.750	.500
17	13	.765	.529
18	13	.722	.444
19	14	.737	.474
20	15	.750	.500

Figure 3.5: CVR Value

Source: (Ayre & Scally, 2014)

Lawshe (1975) introduced the content validity ratio (CVR), a linear transformation of the degree of agreement among panel experts regarding the classification of an item as "essential." The formula for the Conversion Rate (CVR) is as follows.

$$CVR = \frac{n_e - (N/2)}{N/2},$$

The total number of panel members is denoted by N, while the number of panel members is represented by n_e who consider an item to be "essential," and CVR is the content validity ratio. Therefore, there were 64 total statements before to the CVR, and 57 statements were kept on the scale after 7 items were removed as per the expert panel's recommendation.

Table 3.3: Experts' Calculated CRV and Response

Items	Expert1	Expert2	Expert3	Expert4	Expert5	Expert6	CVR
Item 1	✗	✗	✗	✗	✗	✗	1
Item 2	✗	✗	✗	✗	✗	✗	1
Item 3	✗	✗	✗	✗	✗	✗	1
Item 4	✗	✗	✗	✗	✗	✗	1
Item 5	✗	✗	✗	✗	✗	✗	1
Item 6	✗	✗	✗	✗	✗	✗	1
Item 7	✗	✗	✗	✗	✗	✗	1
Item 8	✗	✗	✗	✗	✗	✗	1
Item 9	✗	✗	✗	✗	✗	✗	1
Item 10	✗	✗	✗	✗	✗	✗	1
Item 11	✗	✗	✗	✗	✗	✗	1
Item 12	✗	✗	✗	✗	✗	✗	1
Item 13	✗	✗	✗	✗	✗	✗	1
Item 14	✗	✗	✗	✗	✗	✗	1
Item 15	✗	✗	✗	✗	✗	✗	1
Item 16	✗	✗	✗	✗	✗	✗	1
Item 17	✗	✗	✗	✗	✗	✗	1
Item 18	✗	✗	✗	✗	✗	✗	1
Item 19	✗	✗	✗	✗	✗	✗	1
Item 20	✗	✗	✗	✗	✗	✗	1
Item 21	✗	✗	✗	✗	✗	✗	1
Item 22	✗	✗	✗	✗	✗	✗	1

Item 23	✗	✗	✗	✗	✗	✗	1
Item 24	✗	✗	✗	✗	✗	✗	1
Item 25	✗	✗	✗	✗	✗	✗	1
Item 26	✗	✗	✗	✗	✗	✗	1
Item 27	✗	✗	✗	✗	✗	✗	1
Item 28	✗	✗	✗	✗	✗	✗	1
Item 29	✗	✗	✗	✗	✗	✗	1
Item 30	✗	✗	✗	✗	✗	✗	1
Item 31	✗	✗	✗	✗	✗	✗	1
Item 32	✗	✗	✗	✗	✗	✗	1
Item 33	✗	✗	✗	✗	✗	✗	1
Item 34	✗	✗	✗	✗	✗	✗	1
Item 35	✗	✗	✗	✗	✗	✗	1
Item 36	✗	✗	✗	✗	✗	✗	1
Item 37	✗	✗	✗	✗	✗	✗	1
Item 38	✗	✗	✗	✗	✗	✗	1
Item 39	✗	✗	✗	✗	✗	✗	1
Item 40	✗	✗	✗	✗	✗	✗	1
Item 41	✗	✗	✗	✗	✗	✗	1
Item 42	✗	✗	✗	✗	✗	✗	1
Item 43	✗	✗	✗	✗	✗	✗	1
Item 44	✗	✗	✗	✗	✗	✗	1
Item 45	✗	✗	✗	✗	✗	✗	1
Item 46	✗	✗	✗	✗	✗	✗	1
CVR (Critical) for a panel size (N) of 6 is 1							1

Source: (Author's own)

3.9 FACE VALIDITY

Face validity refers to the extent to which the items and enquiries in the questionnaire are coherent and relevant to the investigation. A pilot analysis was undertaken to discover contradictions in the questionnaire's assertions. Only a limited number of deficiencies were identified and recommended. The questionnaire was revised according to the input received. Three scholars and three hospitality professionals were consulted to obtain comments on the

development of the research questionnaire. In accordance with the recommendations from the panel of experts, the requisite modifications were implemented to the questions prior to the administration of the research tool (Daud et al., 2021). Moreover, most experts indicated that the study questionnaire should be comprehensible, with small modifications required for certain topics. Consequently, some modifications were implemented.

3.10 PILOT STUDY

A questionnaire that accounted for objectives and hypotheses was utilised for the pilot study. The study provides insights into studies with smaller sample sizes. The pilot study concentrated on the characteristics of the questionnaires for hotel visitors. A five-point Likert scale was utilised, ranging from strongest impact to lowest impact and from strongly agree to strongly disagree (Robinson, 2010). The pilot study was executed in April 2023 for the present research. An assessment of the questionnaire's wording, respondent familiarity, response rate, question sequence, and other factors was conducted during the pilot study. Reliability and content authenticity are also confirmed with its aid.

Pilot research was first designed with a sample size of 50 managers from various hotels in Delhi. Pilot testing indicated that the average respondent required between 10 and 15 minutes to complete the survey. The instrument's dependability was evaluated using Cronbach's alpha, ensuring that the measurements were devoid of errors and yielded the intended results. The findings of the reliability test for the pilot study are presented in Table 3.5. Cronbach (1951) suggests a reliability test threshold of 0.7 for findings. In response to comments from specific respondents, certain things were removed during the pilot test.

Table 3.4: Reliability level of Cronbach's alpha

S. No.	Coefficient of Cronbach's Alpha	Reliability Strength
1	> 0.90	Excellent
2	0.80 - 0.89	Good
3	0.70 - 0.79	Acceptable
4	0.6 - 0.69	Questionable
5	0.5 - 0.59	Poor
6	< 0.59	Unacceptable

Source: (Arof et al., 2018)

Table 3.5: Result of Cronbach's alpha

Sr.no.	Construct	Item	Reliability
1	Perceived ease of use	3	0.864
2	Experience	3	0.882
3	Performance Expectancy	3	0.853
4	Attitude	3	0.851
5	Intention	3	0.824
6	Cost	3	0.881
7	Risk	3	0.902
8	Adoption of IHTS	3	0.862
9	Employee Productivity	3	0.844
10	Service quality	3	0.902
11	Cost reduction	3	0.878
12	Sales revenue	3	0.718
13	Profitability	3	0.904
14	Standard of service	3	0.842
15	Guest Experience	3	0.851
16	Return Motivation	3	0.893

Source: (Author's own)

3.11 SUMMARY

This chapter delineates the study's objectives, research hypotheses, methodology, survey strategy, sample framing, research questionnaire design, and statistical approach. The chapter presents a comprehensive description of the research methodologies employed to obtain precise and reliable data. A self-developed quantitative research questionnaire utilising a 5-point Likert scale was employed to collect responses. The thorough preparation involved in developing the research questionnaire and conducting pre-testing aimed to guarantee precise data collection. Following the categorisation of the data, SPSS 22 was employed for analysis.

CHAPTER-4
DATA ANALYSIS & INTERPRATATION

4.1 INTRODUCTION

The previous chapter addressed suitable research methodologies and the process of identifying the optimal approach for analysis and inference generation. The specifics concerning the research design, demographic, sample size, sampling process, data collection strategy, pilot study details, variable descriptions, and various tests employed were supplied. This chapter analyses data, interprets findings, and formulates hypotheses to reach conclusions on the study's objectives, employing various methodologies and statistical techniques in alignment with the research framework.

The sections of this chapter are as follows;

- **Introduction**
- **Main Survey Study**
- **Demographic Profile of Respondents**
- **KMO and Bartlett's Test**
- **Missing Data Treatment**
- **Outlier Examination**
- **Normality**
- **Homoscedasticity**
- **Multicollinearity**

- **Structure Equation Medeling**
- **Measurement Model**
- **Indicator Reliability**
- **Internal Consistency Reliability**
- **Convergent Validity**
- **Discriminant Validity**
- **Model Fit Testing**
- **Structural Model**
- **Summary**

Pilot studies of the data were used to do the initial screening. After that, the data was then subjected to additional screening using the following methods;

- Outlier inspection
- KMO and Bartlett's Test
- Missing data treatment
- Normality
- Multicollinearity and
- Homoscedasticity tests

A graphical representation was employed to analyze the demographic characteristics of the respondents. Subsequently, the validity and reliability instruments were assessed by inferential analysis using the PLS (Partial Least Squares) software. Variance-based structural equation modeling, known as PLS, has recently acquired prominence, especially in the fields of social sciences and management (Hair et al., 2021; Ullman, 2006). An investigation of indicator reliability was conducted to verify accuracy, consistency, and the elimination of any bias. In order to assess the discriminant and convergent validity of the instrument, a measurement model was created. We created a structural equation modeling (SEM) example to show how the variables relate to one another. The relationships are elaborated upon in the findings of the structural equation modeling. An investigation was performed on the potential correlation between the constructs.

4.2 MAIN SURVEY STUDY

4.2.1 Demographic profile of respondents

Response bias may arise from a sole key informant via self-reported assessments. To mitigate this type of response bias, the researchers also advised incorporating many respondents from the same organization (Phillips, 1981). This study endeavoured to incorporate several respondents from the chosen motels to mitigate response bias. The demographic information of the respondents was collected via the survey from the questionnaire. It was recommended that caution be exercised in selecting the key responder to mitigate response bias.

Table 4.1: Statistics of the respondents

Statistics

		Gender	Age	Education Qualification	Designation	Experience	Department
N	Valid	385	385	385	385	385	385
	Missing	0	0	0	0	0	0

Source: Primary Data from Questionnaire

The table presented herein encapsulates a comprehensive summary of the data amassed for the study. The analysis reveals that a comprehensive total of 385 valid responses were collected concerning various demographic variables, encompassing gender, age, educational qualifications, designation, experience, and departmental affiliation. The dataset exhibited no missing values, thereby signifying a comprehensive and dependable data collection methodology. This extensive dataset will facilitate an analysis of the correlation between diverse demographic factors and the adoption as well as the impact of cutting-edge high-tech services within the hospitality sector.

Table 4.2: Gender profile of the respondents

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	295	76.6	76.6	76.6
	Female	90	23.4	23.4	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table presented herein breaks down the distribution of respondents categorized by gender. Among the total of 385 respondents, 295 individuals, representing 76.6%, identified as male, while 90 individuals, accounting for 23.4%, identified as female. This observation suggests a pronounced male predominance within the sample, warranting further analytical exploration. Comprehending the gender distribution among the respondents is imperative for the accurate interpretation of the findings and for deriving significant conclusions.

Table 4.3: Age profile of the respondents

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25	18	4.7	4.7	4.7
	26-30	135	35.1	35.1	39.7
	31-35	108	28.1	28.1	67.8
	above 35	124	32.2	32.2	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table presented herein explores the distribution of respondents categorized by age demographics. A significant proportion of respondents, specifically 35.1%, are situated within the age demographic of 26 to 30 years. This is closely followed by 32.2% of respondents who belong to the age category exceeding 35 years. This suggests a notable presence of young professionals within the sample, indicating a dynamic and technologically adept workforce in the hospitality sector. The heterogeneous age distribution offers significant insights into the preferences, behaviors, and attitudes exhibited by various age cohorts concerning the adoption and utilization of advanced technological services.

Table 4.4: Educational Qualification of the respondents

Education Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	1	.3	.3	.3
	Graduate	252	65.5	65.5	65.7
	Post Graduate	111	28.8	28.8	94.5
	PhD	21	5.5	5.5	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table presented delineates the distribution of respondents according to their educational qualifications. A considerable proportion of the respondents, specifically 65.5%, possess a graduate degree, thereby reflecting a highly educated sample population. Furthermore, 28.8% of individuals possess a postgraduate degree, while 5.5% hold a Doctor of Philosophy degree. The varied educational backgrounds of the respondents indicate a robust academic foundation, which is crucial for comprehending and integrating intricate technological advancements within the hospitality sector. The heterogeneity of the respondent pool significantly contributes

to the study's richness and depth, facilitating a nuanced comprehension of the effects of high-tech services across different tiers of expertise and experience within the industry.

Table 4.5: Designation of the respondents

Designation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	General Manager	2	.5	.5	.5
	Manager	135	35.1	35.1	35.6
	Assistant Manager	165	42.9	42.9	78.4
	Supervisor	83	21.6	21.6	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table presented delineates the distribution of respondents according to their respective designations within the hotel industry. A notable segment of the respondents, specifically 42.9%, identified as Assistant Managers, while 35.1% held the position of Managers, and 21.6% were classified as Supervisors. A mere fraction, specifically 0.5%, comprised individuals holding the position of General Manager. The varied representation of managerial and supervisory positions facilitates a thorough comprehension of the challenges and opportunities encountered by various tiers of hotel management in the adoption and implementation of innovative high-tech services. The incorporation of diverse designations significantly enriches the study, facilitating a nuanced examination of the influence of technology on various facets of hotel operations.

Table 4.6: Experience of the respondents

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	17	4.4	4.4	4.4
	6-10	234	60.8	60.8	65.2
	11-15	100	26.0	26.0	91.2
	16-20	34	8.8	8.8	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table provided outlines the distribution of respondents according to their years of experience within the hotel industry. A considerable proportion of the respondents, specifically

60.8%, possess 6-10 years of experience, thereby suggesting a notable representation of mid-level professionals within the sample population. The heterogeneity of experience levels, spanning from 0-5 years to 16-20 years, guarantees a robust reservoir of insights and perspectives, integrating both innovative viewpoints and established expertise. The presence of this diversity will significantly enhance our comprehension of the multifaceted challenges and opportunities that accompany the adoption and implementation of innovative high-tech services within the hospitality sector.

Table 4.7: Department of the respondents

Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Front office	90	23.4	23.4	23.4
	Housekeeping	55	14.3	14.3	37.7
	Food & Beverage Service	136	35.3	35.3	73.0
	Food Production	92	23.9	23.9	96.9
	others	12	3.1	3.1	100.0
	Total	385	100.0	100.0	

Source: Primary Data from Questionnaire

The table illustrates the distribution of respondents categorized by their respective departments within the hotel industry. A notable percentage of the participants, 35.3%, belonged to the Food & Beverage Service department, while 23.9% were from Food Production and 23.4% came from Front Office. The varied representation of departments guarantees a thorough comprehension of the challenges and opportunities encountered by distinct operational areas in the adoption and implementation of innovative high-tech services. The integration of multiple departments enriches the study, facilitating a detailed examination of technology's influence on different facets of hotel operations.

4.2.2 KMO and Bartlett's Test

Results from two tests used to determine whether the data was suitable for factor analysis—the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity—are shown in the table. Meyer-Kaiser-Olkin Co. Assessment of Sample Appropriacy: The sample size is considered sufficient for factor analysis when the KMO value is 0.954. A high KMO score suggests a strong correlation among the variables, rendering them appropriate for factor analysis.

Bartlett's Test of Sphericity: Since the correlation matrix is not an identity matrix, the Bartlett's Test of Sphericity is statistically significant (p <.001). This indicates that substantial correlations exist among the variables, which is a requisite requirement for factor analysis.

The outcomes of the KMO and Bartlett's tests indicate that the data is appropriate for factor analysis. The elevated KMO value and the significant Bartlett's test suggest that the variables exhibit strong correlation, indicating that factor analysis is expected to produce substantive results.

Table 4.8: KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.954
Bartlett's Test of Sphericity	Approx. Chi-Square	5480.354
	df	120
	Sig.	<.001

Source: Primary Data from Questionnaire

Objective 1 - To study various innovative Hi-Tech Services adopted in Hotels in Delhi-NCR.

Table 4.9: Descriptive analysis of Technology Adoption

High tech Services	**Frequency**	**Percentage**
Wifi/High-speed	385	100
Online booking and Payment	378	98.2
Self-Check In / Check Out kiosks	375	97.4
Express Check In / Check Out	379	98.4
Online Concierge Service	341	88.6
Hotel Mobile apps	228	59.2
Live Streaming	217	56.4
Automatic Sanitizer dispenser	379	98.4
Thermal Scanner	381	99

AI-powered chatbots	362	94
Intelligent virtual assistants	203	52.7
AI-driven recommendation systems	377	97.9
3D Television	374	97.1
Smart room controls and automation systems	380	98.7
Automated inventory management systems	378	98.2
Facial recognition systems	213	55.3
contactless payments and access.	384	99.7
Voice recognition systems	368	95.6
Virtual reality tours	47	12.2
VR-based training programs	114	29.6
Virtual reality concierge	30	7.8
Digital Menu	369	95.8
Digital payments	373	96.9
Self -Order Kiosks	30	7.8
Kitchen Display screens	355	92.2
Video conference Capabilities	375	97.4
Video Surveillance	373	96.9
Smart Station	76	19.7
Smart toilet	85	22.1

Source: Primary Data from Questionnaire

The table outlines the frequency and percentage of adoption for different high-tech services within 5-star deluxe and 5-star hotels located in Delhi-NCR. The findings indicate a significant uptake of various technologies, highlighting a robust focus on technological progress within the hospitality sector. Key findings are identified from the results which are:

Widespread Adoption: Services such as Wi-Fi, online booking and payment, self-check-in/out, and express check-in/out have seen nearly universal implementation, highlighting the essential impact of technology on contemporary hotel operations.

Innovative Advancements: Technologies such as AI-powered chatbots, intelligent virtual assistants, and facial recognition systems are emerging trends in the hospitality sector, with a notable number of hotels adopting these innovations, reflecting the industry's readiness to integrate advanced solutions.

Opportunities for Advancement: The adoption rates of services such as live streaming, hotel mobile applications, and virtual reality tools are relatively low, indicating promising avenues for future development and investment. The data reveals a favourable trend in the adoption of advanced technological services within 5-star hotels in the Delhi-NCR region. Potentially increasing operational efficiency, visitor experiences, and customer satisfaction is this trend.

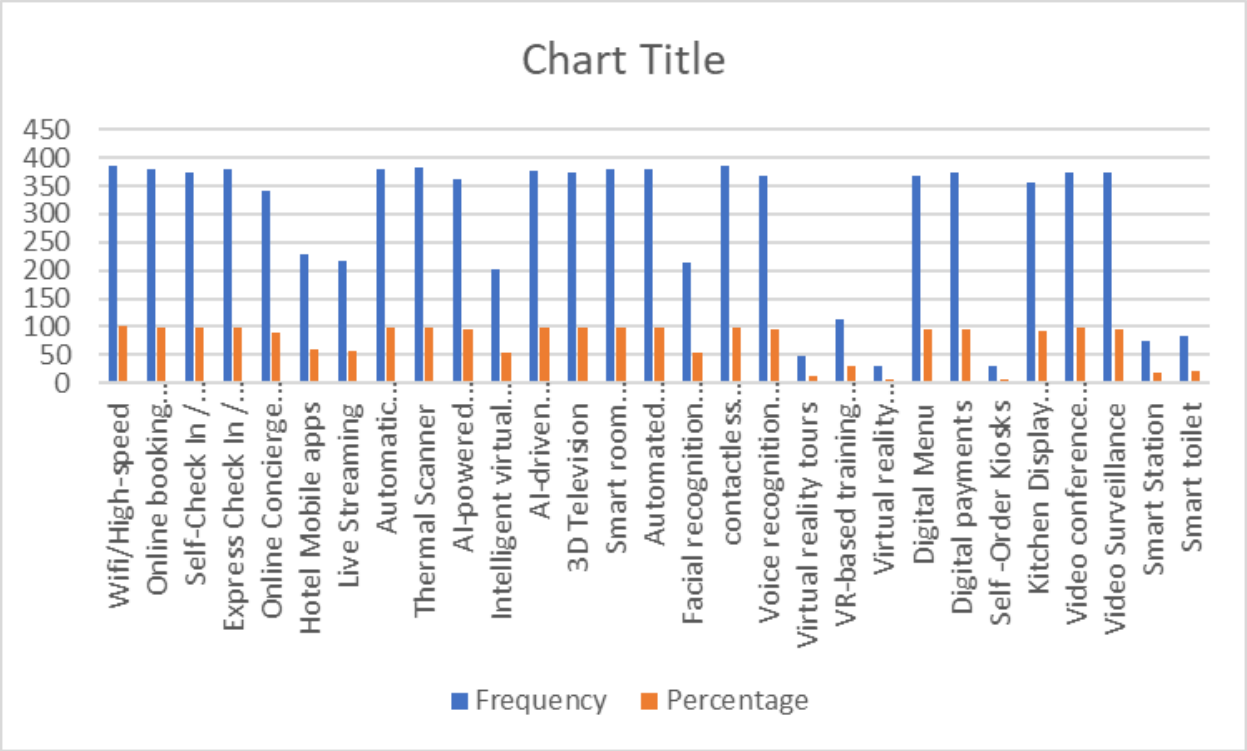

Figure 4.1: Descriptive analysis of Technology Adoption

Figure 4.1 shows that the frequency and percentage of adoption of different high-tech services in 5-star hotels located in Delhi-NCR. The chart features bars that represent distinct high-tech services, with the height of each bar reflecting the quantity of hotels that have embraced that service.

The chart indicates a significant uptake of various technologies, such as Wi-Fi/High-speed internet, online booking and payment, self-check-in/out, and express check-in/out. The integration of these services has become crucial for contemporary hotels, showcasing the sector's dedication to delivering convenient and efficient experiences for guests.

The chart also emphasizes the increasing utilization of innovative technologies like AI-driven chatbots, smart virtual assistants, and facial recognition systems. The potential of these technologies to transform the hospitality industry is significant, as they can automate tasks, enhance guest experiences, and improve operational efficiency.

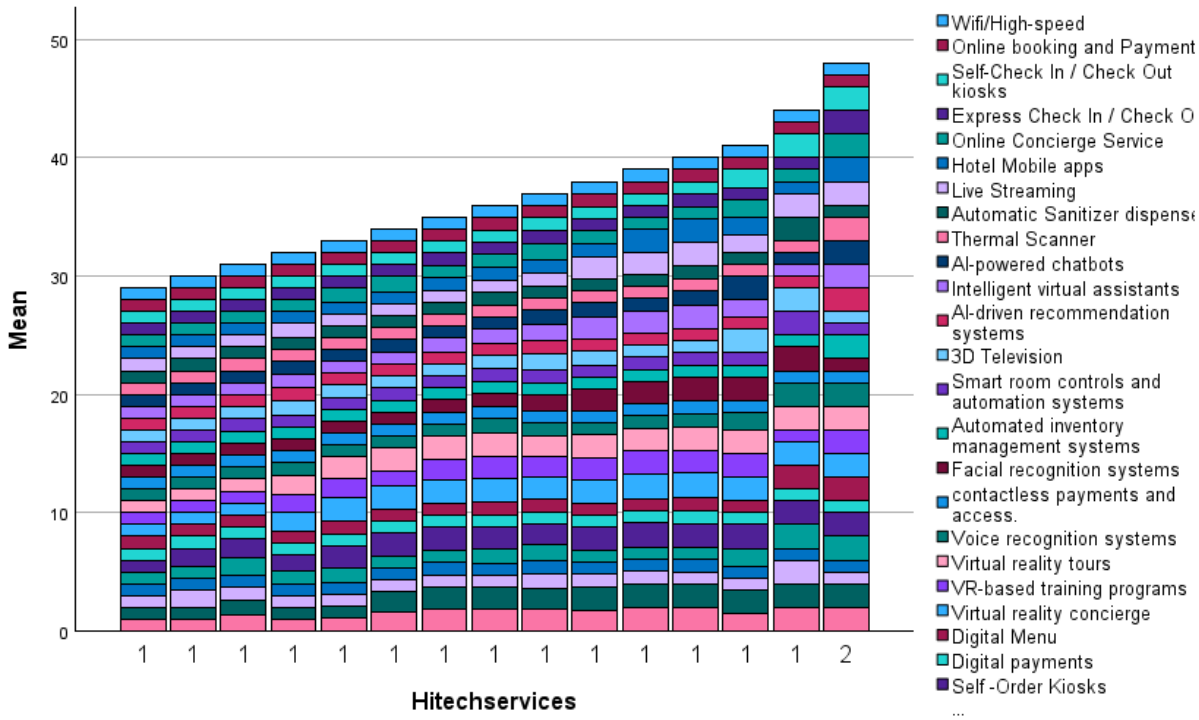

Figure 4.2: Hi tech Service Adoption rate

The bar chart illustrates in figure 4.2 the average adoption rates of different high-tech services among a selection of 5-star hotels in the Delhi-NCR region. The chart provides an in-depth analysis of the distribution of various technologies across the industry. The chart illustrates a favourable trend in the adoption of high-tech services within the 5-star hotel sector in Delhi-NCR. This trend is influenced by elements like rising guest expectations, the necessity for

operational efficiency, and the ambition to stand out from competitors. By adopting these technologies, hotels can elevate guest experiences, optimize operations, and boost overall performance.

The examination of high-tech service adoption in 5-star hotels in Delhi-NCR indicates a favourable movement towards technological advancement. The extensive integration of essential technologies and the growing fascination with innovative advancements highlight the sector's dedication to delivering state-of-the-art services and improving guest experiences. This finding is consistent with the study's aim of exploring the diverse innovative high-tech services implemented in hotels within the Delhi-NCR region.

4.2.3 Missing Data Treatment

Ensuring the precision of respondents' comments is essential, particularly after the disclosure of their demographic data. A major difficulty in surveys is absent data, frequently occurring when respondents omit answers to certain areas of the questionnaire. Fidell (2003) underscored the significance of missing data, accentuating its difficulties in the data analysis process. Bajpai (2011) emphasized the challenge of acquiring comprehensive data during survey collecting, highlighting the ubiquity of this problem.

The existence of absent data presents significant statistical difficulties in data analysis. Cordeiro (2009) observed that absent data substantially reduces statistical power, affecting the integrity of analyses and potentially distorting outcomes. The decrease in sample size resulting from absent data highlights the necessity of effectively tackling this problem. Insufficient adjustment for explanations of missing data might considerably reduce the sample size, resulting in inadequate data for thorough analysis and perhaps erroneous interpretations of findings.

To mitigate the challenges posed by missing data, (Howell, 2007) recommended a structured approach;

- Identifying the nature of missing data.
- Assessing the extent or level of missing data.
- Determining the randomness of the missing data.
- Implementing suitable treatments to address missing data.

Efron (1994) advocated for the application of bootstrap approaches to address missing data, correlating them with the principles of multiple imputation and underscoring the efficient implementation of these techniques. Moreover, Khademi (2020) emphasized the substantial difficulties that absent data provide in practical data analysis contexts. Effectively addressing

missing data using systematic techniques and sophisticated methods is essential to maintain the integrity and correctness of research analyses. During the survey process, the researcher noted that all items in the dataset were addressed by the respondents. No instances of missing data were detected, eliminating the necessity for any treatment or intervention related to missing data. All responses were thorough and accounted for, guaranteeing a complete dataset for analysis without any omissions.

4.2.4 Outliers Examination

Aggarwal (2015) characterizes an outlier as a data point that markedly diverges from other data points, possibly signifying an alternative generating process. Møller et al., (2005) characterize outliers as observations that significantly deviate from the predominant data points. Analysts generally agree that outliers can cause non-normality in data distribution and may affect the accuracy of conclusions (Tabachnick & Fidell, 2007). Tabachnick and Fidell (2007) identify four primary factors for the emergence of outliers in datasets. Outliers may originate from multiple causes, as emphasized by Tabachnick and Fidell (2007):

- Incorrect data entry: Mistakes during data input could lead to outliers.
- Inappropriate specification of missing value codes: Using incorrect codes for missing values might result in outliers.
- Inclusion of observations not part of the population: Adding entries that don't belong to the intended population can introduce outliers.
- Extreme values skewing normal distribution: Variables in the population may contain extreme values, disrupting the normal distribution.

Worsley et al., (2004) categorized outliers into two types;

- Univariate outliers: “Extreme values on a single variable”.
- Multivariate outliers: “Combinations of extreme values across two or more variables”.

Møller et al. (2005) also characterized outliers in relation to sample size. In smaller samples (e.g., 80 or fewer), a score of 2.5 standard deviations or more from the mean is deemed an outlier, whereas in larger samples, a value surpassing 3.0 standard deviations from the mean is classified as an outlier. The present study utilized a combination of items to represent singular variables for the identification of univariate outliers. The SPSS software was employed to transform the data values for each observation into standardized scores (z-scores), as outlined

by Tabachnick & Fidell (2007). Table 4.9 depicts the detection of univariate outliers in the sample. None of the Z scores surpass the normalized threshold of 3.29, indicating the absence of univariate outliers in the dataset.

Table 4.10: Minimum and Maximum Z scores of variables

	Minimum	Maximum
Zscore: **Percieved ease of use**	-3.52354	.94537
Zscore: **Experience**	-3.76876	.67317
Zscore: **Performance Expectancy**	-4.41554	.46129
Zscore: **Attitude**	-4.56413	.63722
Zscore: **Intention**	-4.72071	.57162
Zscore: **Cost**	-3.39763	.60713
Zscore: **Risk**	-3.99084	.54748
Zscore: **Adoption of IHTS**	-3.80595	.56950
Zscore: **Employee Productivity**	-4.39449	.61230
Zscore: **Service quality**	-3.63915	.68960
Zscore: **Cost reduction**	-3.26692	.63245
Zscore: **Sales revenue**	-4.86700	.61594
Zscore: **Profitability**	-3.93833	.66802
Zscore: **Standard of service**	-4.56712	.59309
Zscore: **Guest Experience**	-2.79048	.65413
Zscore: **Return Motivation**	-3.01469	.66604

A box plot serves as a graphical instrument for the discovery of multivariate outliers. Five cases were classified as mild outliers, with an interquartile range exceeding 1.5, as seen by the graph in Figure 4.3; no extreme outliers were detected in the data.

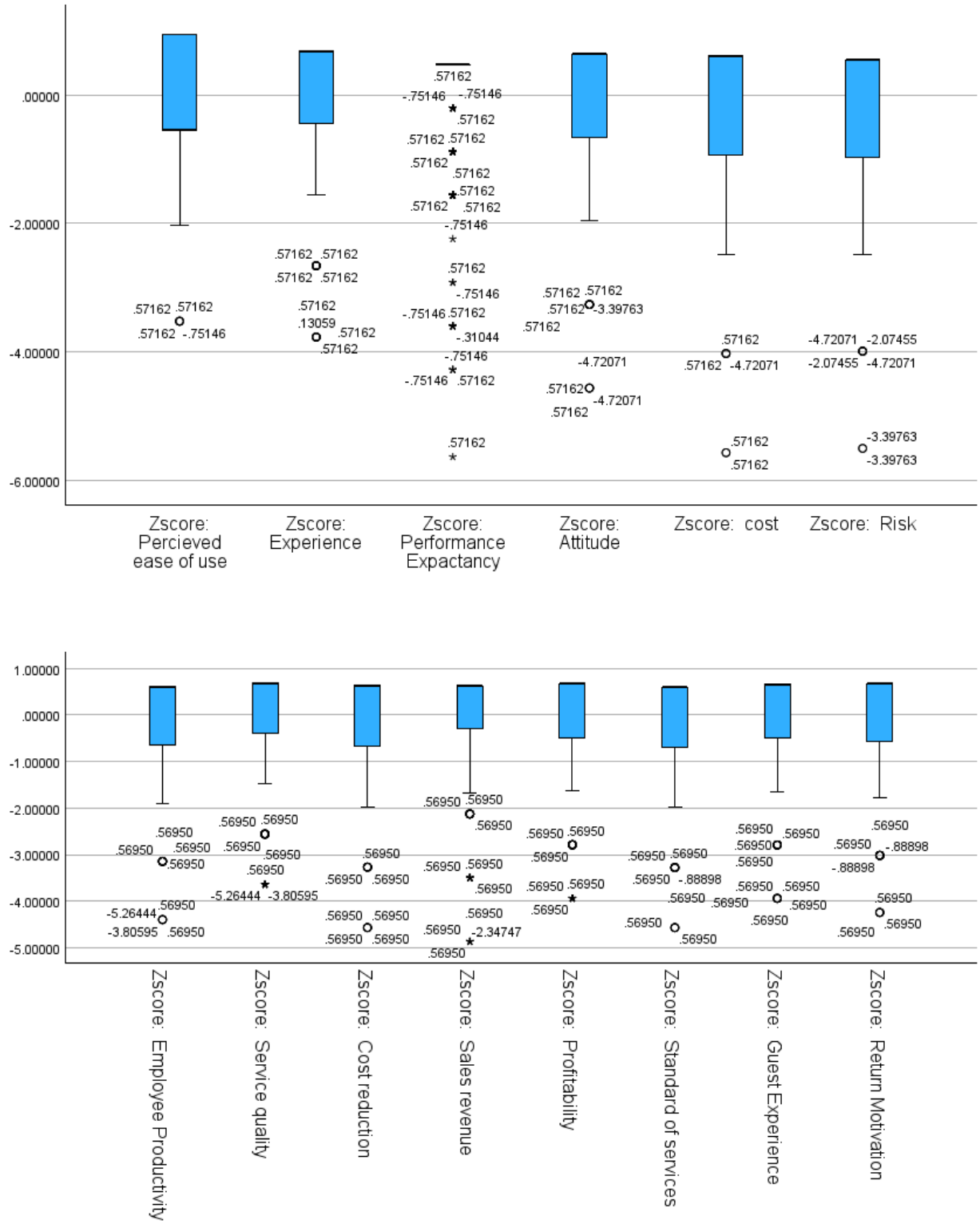

Figure 4.3: Box-Plot for Outliner Examination

Table 4.11: Multivariate Outlier Detection

Case Number	**Mahalanobis D2**	**D2/df**
35	35.74989	5.96
52	34.63330	5.77
76	33.90815	5.65
78	21.52772	3.59
140	20.66549	3.44
163	19.69963	3.31
185	19.52169	3.28
203	18.35638	3.06
286	17.30440	2.88
343	16.79992	2.80

The table displays the Mahalanobis distance (D2) alongside the ratio of D2 to degrees of freedom (D2/df) for a selected subset of cases within the dataset. The Mahalanobis distance quantifies multivariate distance, reflecting the deviation of a specific data point from the centroid of the multivariate distribution. A higher D2 value indicates that the case is situated further from the center, which may suggest it is an outlier. The D2/df ratio serves as a standardized metric for the Mahalanobis distance, factoring in the number of variables involved in the analysis. An elevated D2/df value indicates a more pronounced outlier. Cases exhibiting elevated D2/df values, including case numbers 35, 52, and 76, may be identified as potential outliers. Identifying potential outliers via Mahalanobis distance and D2/df analysis enables researchers to evaluate their influence on the overall analysis and implement suitable measures, including removal or the application of robust statistical methods. This guarantees the precision and dependability of the research results. Møller et al. (2005) state that an outlier may be retained in the analysis unless it contradicts the conclusions. Tabachnick and Fidell (2007) assert that an outlier may be retained if it is deemed detrimental until it ceases to influence the results.

4.2.5 Normality

Multivariate analysis relies on the assumption of normality in data distribution, as noted by Fidell & Tabachnick (2003). Normality indicates that data is symmetrically distributed around the mean, resulting in a bell-shaped curve in graphical representations, with frequencies diminishing as data deviates from the mean. The data distribution of each item is presumed to conform to a normal distribution. Møller et al., (2005) highlighted that substantial deviations from normality compromise the validity of statistical tests, notably impacting the reliability of F and t statistics utilized in analyses.

Tabachnick and Fidell (2007) proposed both graphical and statistical methods for assessing the normality of data distribution. The bell-shaped curve in a graph signifies normality in the distribution of a variable. Other tests referenced for assessing the normal distribution of data (Miot, 2017). Dixon and Massey (1951) described the Kolmogorov-Smirnov test as a method that relies on the maximum difference between a hypothetical cumulative distribution and an empirical cumulative distribution. Ghasemi and Zahediasl (2012) suggested that the Shapiro-Wilk test is a more suitable method for assessing data normality.

The study employed the Kolmogorov-Smirnov and Shapiro-Wilk tests to evaluate the normality of each variable, with results presented in Table 4.12. The results resulted in the null hypothesis being rejected, indicating that the data did not conform to a normal distribution. The PLS Structural Equation Modeling method was utilized due to its lack of requirement for normality assumptions in the data. The Kolmogorov-Smirnov test is preferred for assessing the alignment of a sample's distribution with theoretical distributions because of its effectiveness in this evaluation.

Table 4.12: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
I find the new high-tech services easy to use.	0.324	385	0.000	0.738	385	0.000
High- tech services are smooth to handle	0.296	385	0.000	0.772	385	0.000

Technology is useful during operation	0.294	385	0.000	0.775	385	0.000
I have prior experience with similar high-tech services.	0.295	385	0.000	0.741	385	0.000
My previous experiences with technology have been positive.	0.337	385	0.000	0.741	385	0.000
I had previously used the high-tech services for various professional or personal activities	0.354	385	0.000	0.687	385	0.000
I believe that using these high-tech tools will increase my efficency	0.458	385	0.000	0.496	385	0.000
These technologies will help me solve problems more creatively	0.477	385	0.000	0.465	385	0.000
Using these innovative services will improve the quality of my work	0.475	385	0.000	0.437	385	0.000
I have a positive attitude towards adopting innovative high-tech services.	0.418	385	0.000	0.605	385	0.000
Using high-tech services is a good idea.	0.398	385	0.000	0.627	385	0.000
I intend to apply high-tech services in operations in the future.	0.383	385	0.000	0.644	385	0.000
I intend to adopt high-tech services in my department.	0.399	385	0.000	0.603	385	0.000

I plan to recommend the use of these technologies to my colleagues.	0.394	385	0.000	0.609	385	0.000
I am willing to invest time and resources into learning about these innovations.	0.393	385	0.000	0.612	385	0.000
The process of adopting high-tech services are costly.	0.414	385	0.000	0.604	385	0.000
I believe that the long-term benefits of these technologies outweigh their initial costs.	0.403	385	0.000	0.614	385	0.000
Financial constraints would not deter me from adopting these innovations.	0.410	385	0.000	0.611	385	0.000
My fear of exposure to high-tech services is high.	0.307	385	0.000	0.721	385	0.000
The potential benefits of these technologies outweigh the risks involved.	0.349	385	0.000	0.707	385	0.000
I am comfortable with the uncertainties related to implementing new technologies.	0.380	385	0.000	0.658	385	0.000
The hotel has adopted many innovative technology	0.413	385	0.000	0.599	385	0.000
The hotel uses the latest technology in hospitality	0.409	385	0.000	0.606	385	0.000

The hotel staff is trained and adept with various tech tools	0.408	385	0.000	0.608	385	0.000
The hotel staff efficiently completes their assigned tasks.	0.381	385	0.000	0.640	385	0.000
Employees consistently meet or exceed service standards.	0.377	385	0.000	0.646	385	0.000
Our hotel has a good employee performance	0.375	385	0.000	0.648	385	0.000
The quality of service provided by employees is high.	0.334	385	0.000	0.696	385	0.000
Staff members are attentive to guests' needs.	0.329	385	0.000	0.701	385	0.000
Employees demonstrate professionalism in their interactions with guests.	0.327	385	0.000	0.702	385	0.000
Innovative technologies have helped reduce operational costs at the hotel.	0.387	385	0.000	0.636	385	0.000
Automation has decreased labour costs without compromising service quality.	0.375	385	0.000	0.652	385	0.000
The hotel effectively manages resources to minimize expenses.	0.381	385	0.000	0.644	385	0.000
The introduction of hi-tech services has increased overall sales revenue.	0.404	385	0.000	0.621	385	0.000

The average revenue per guest has improved since implementing new technologies.	0.395	385	0.000	0.613	385	0.000
The hotel attracts more customers due to enhanced service offerings.	0.390	385	0.000	0.620	385	0.000
The hotel's profitability has increased as a result of adopting innovative services.	0.359	385	0.000	0.676	385	0.000
Investments in technology have yielded a positive return on investment.	0.351	385	0.000	0.686	385	0.000
The financial performance of the hotel has improved in the last year.	0.356	385	0.000	0.679	385	0.000
Guest is satisfied with the standard of service they receive at this hotel.	0.391	385	0.000	0.625	385	0.000
Staff members respond promptly to guests requests and inquiries.	0.386	385	0.000	0.631	385	0.000
The service provided meets guest expectations.	0.386	385	0.000	0.631	385	0.000
Guests overall experience at the hotel has been positive.	0.356	385	0.000	0.673	385	0.000
The booking process was smooth and user-friendly.	0.352	385	0.000	0.678	385	0.000
Guest enjoyed their stay and felt valued as a guest.	0.350	385	0.000	0.680	385	0.000

Guest have chosen to return to this hotel based on their previous experience.	0.365	385	0.000	0.668	385	0.000
Guestd always recommend this hotel to friends and family.	0.358	385	0.000	0.675	385	0.000
Guests participated in the loyality program offered by hotel	0.360	385	0.000	0.673	385	0.000

a. Lilliefors Significance Correction

4.2.6 Homoscedasticity

Homoscedasticity is the condition wherein a series of random variables preserves a constant, unchanging, finite variance. Said another way, it means that, across all values, the relationship between dependent and independent variables stays the same (Tabachnick & Fidell, 2007). According to Fidell & Tabachnick (2003), in multiple regression data complying to the assumption of equal variance is absolutely necessary. We call data lacking homoscedasticity heteroscedastic. Heteroscedastic data can produce complicated problems in multivariate analysis (Møller et al., 2005). Heteroscedasticity (Fidell & Tabachnick, 2003) is caused in part by differing mistakes at different levels of independent variables.

According to Møller et al., 2005 Levene's Test of equal variance is the best approach to identify homoscedasticity. Likewise, (Fidell & Tabachnick 2003) advise the Levene test should be used in evaluating variance homogeneity. Most computed results in this study exceeded the threshold significance value of 0.05, according to the Levene test conducted with SPSS software as shown in Table 4.13.

Table 4.13: Homoscedasticity

Tests of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Perceived ease of use	2.913	6	378	0.009
Experience	6.718	6	378	0.000

Performance Expectancy	5.942	6	378	0.000
Attitude	19.894	6	378	0.000
cost	6.315	6	378	0.000
Risk	37.065	6	378	0.000
Adoption of Innovative high tech services	3.125	6	378	0.005
Employee Productivity	2.916	6	378	0.009
Service quality	2.620	6	378	0.017
Cost reduction	4.488	6	378	0.000
Sales revenue	15.425	6	378	0.000
Profitability	3.736	6	378	0.001
Standard of services	5.128	6	378	0.000
Guest Experience	2.986	6	378	0.007
Return Motivation	6.832	6	378	0.000

4.2.7 Multicollinearity

If the correlation matrix shows that three or more independent variables are correlated, then multicollinearity exists (Field & Miles, 2010). According to Fidell and Tabachnick (2003), this effect makes it harder to grasp how each independent variable contributes, which in turn reduces the amount of variance that each variable can explain (Møller et al., 2005). Furthermore, results and the size of regression coefficients can be constrained by excessive multicollinearity. One possible solution to these problems is to use the Tolerance or Variance Inflation Factor (VIF) to identify multicollinearity, which is a set of highly correlated variables. According to Abubakar et al., (2017), multicollinearity is indicated by low tolerance and high VIF values, which are inversely associated. In order to indicate acceptable levels of collinearity among indicators, Hair Jr et al., (2021) state that an ideal VIF should be less than 5. Table 4.14

shows that there was no problem with multicollinearity because all of the VIF values were below 5.

With the goal of identifying highly correlated factors that can lead to multicollinearity difficulties, this research computed VIF by regression analysis, treating all variables as independent variables. For more trustworthy and precise analysis results, this stage aids in choosing which variables to keep and which to remove.

Table 4.14: Multicollinearity

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.852	0.412		-2.070	0.039		
	Percieved ease of use	0.067	0.041	0.060	1.630	0.104	0.888	1.126
	Experience	0.036	0.030	0.043	1.211	0.227	0.938	1.067
	Performance Expactancy	0.044	0.054	0.029	0.820	0.413	0.979	1.021
	Attitude	0.253	0.035	0.257	7.269	0.000	0.955	1.047
	cost	0.038	0.042	0.033	0.909	0.364	0.921	1.085
	Risk	0.742	0.041	0.649	17.998	0.000	0.920	1.087

a. Dependent Variable: Intention									
Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
		B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	4.146	0.429		9.673	0.000			
	Employee Productivity	0.062	0.043	0.072	1.428	0.154	0.877	1.140	
	Service quality	0.243	0.038	0.328	6.334	0.000	0.825	1.213	
	Cost reduction	-0.099	0.043	-0.111	-2.306	0.022	0.962	1.039	
	Sales revenue	-0.111	0.046	-0.118	-2.424	0.016	0.929	1.076	
	Profitability	-0.194	0.073	-0.245	-2.647	0.008	0.257	3.887	

	Standard of services	0.145	0.043	0.163	3.358	0.001	0.933	1.072	
	Guest Experience	0.020	0.074	0.025	0.265	0.791	0.247	4.048	
	Return Motivation	0.042	0.040	0.050	1.045	0.297	0.964	1.037	
a. Independent Variable: Adoption of Innovative high tech services									

4.3 STRUCTURAL EQUATION MODELING

The study's data analysis relied heavily on Structural Equation Modelling (SEM). As a forward-thinking statistical tool, Structural equation modeling (SEM) lets you describe how many dependent and independent parts interact with each other at the same time (Gefen et al., 2000). Data interpretation and insight extraction were carried out by means of SmartPLS 4.0, an application based on Partial Least Squares (PLS). Two primary models were employed within the context of SEM:

1. Measurement Model: This model evaluates the relationships between observed variables and their respective latent constructs, essentially assessing the measurement validity and reliability.

2. Structural Model: This model delves into the relationships among latent constructs, unveiling the complex web of connections between various constructs in the research framework.

The study utilised SEM and Smart PLS 4.0 to analyse the complex relationships among various constructs, providing a detailed understanding of the underlying dynamics.

4.3.1 Measurement Model

The measurement model establishes the relationship between latent constructs and their respective indicator variables, while the structural model clarifies the interconnections among

these constructs (Chin & Newsted, 1999). The structural approach emphasises estimating and identifying relationships, whereas the measurement model focusses on assessing internal consistency reliability, discriminant validity, and convergent validity metrics (Hair Jr et al., 2021).

4.3.1.1 Indicator Reliability

In the evaluation of indicator dependability, the validation and reliability of survey instruments is a crucial element, also known as testing psychometric characteristics (Møller et al., 2005). Scale dependability ascertains consistency, precision, and mitigates potential biases. Diverse methodologies, including split-half, test-retest, and Cronbach's alpha coefficient, can assess measurement reliability. Table 4.15 presents the estimation of indicator reliability through outer loadings, which delineate the association between variables and their indicators in reflective measurement models.

Hair Jr et al. (2021) assert that in reflective measurement models, it is necessary to estimate outside loadings. An acceptable indication dependability value should generally surpass 0.7. Most indicator variables in Table 4.15 exceed the requisite threshold value of 0.7, signifying adequate indicator dependability.

Table 4.15: Indicator Reliability

Variables	**Indicator items**	**Outer loadings**
Attitude	A1	0.902
	A3	0.774
	A3	0.932
Cost	C1	0.98
	C2	0.884
	C3	0.976
Experience	E1	0.213
	E2	0.446
	E3	-0.265
Intention	I1	0.997
	I2	0.998
	I3	0.997
Performance Expectancy	PE1	0.582

	PE2	0.579
	PE3	0.995
PEOU	PEOU1	0.882
	PEOU2	0.978
	PEOU3	0.975
Risk	R1	0.889
	R2	0.92
	R3	0.935
Adoption of IHTS	AIHTS1	0.997
	AIHTS2	0.998
	AIHTS3	0.997
Employee Performance	EP1	0.565
	EP2	0.56
	EP3	0.564
	SQ1	0.941
	SQ2	0.942
	SQ3	0.941
Financial Performance	CR1	0.768
	CR2	0.773
	CR3	0.67
	SR1	0.724
	SR2	0.704
	SR3	0.706
	P1	0.977
	P2	0.945
	P3	0.975
Guest Satisfaction	GE1	0.994
	GE2	0.995
	GE3	0.994
	SS1	0.774
	SS2	0.774
	SS3	0.674

	RM1	0.651
	RM2	0.723
	RM3	0.74

4.3.1.2 Internal Consistency Reliability

Osman et al. (2012) asserted that prior to doing structural model analysis, it is essential to evaluate the reliability and validity of the variables. The analysis results were utilised to assess the reliability of internal consistency. The current study assessed internal consistency using Cronbach's alpha and Composite Reliability (CR). Hair Jr et al., (2021) asserted that Cronbach's alpha is the conventional criterion for assessing internal consistency. An estimation of the internal reliability is presented. Fidell and Tabachnick (2003) asserted that Cronbach's alpha is the most suitable and commonly utilised measure for evaluating dependability in scholarly research.

Hair Jr et al., (2021) assert that composite measures are theoretically better suitable for assessing internal consistency due to some limitations of Cronbach's alpha. Consequently, internal consistency is assessed by composite reliability. Bagozzi (1994) asserted that internal consistency can only be achieved when the coefficient of determination (CR) is a minimum of 0.7. Table 4.16 assesses the Composite reliability and Cronbach's alpha were used to assess the constructs' internal consistency. There is no Cronbach's alpha value below 0.7, and there is also a composite reliability value over 0.7 for the same construct as presented in Table 4.16.

Table 4.16: Internal consistency reliability

Variables	**Cronbach's alpha**	**Composite reliability**
Attitude	0.858	1.054
Cost	0.943	0.998
Experience	0.882	-4.983
Intention	0.997	0.998
PEOU	0.941	0.978
Performance Expectancy	0.888	-8.43
Risk	0.902	0.903
AIHTS	0.997	0.997
Employee Performance	0.881	0.959

Financial Performance	0.709	0.959
Guest Satisfaction	0.73	1.002

4.3.1.3 Convergent validity

Convergent validity refers to the extent of correlation between two evaluations of comparable ideas (Abbasi, 2011). Convergent validity is defined as the extent to which one measure of a concept corresponds with another measure using a different indicator (Hair Jr et al., 2021). The validity and reliability of reflective measurement models must be assessed. Research by Carlson and Herdman (2012) indicated that the most critical phase in achieving accurate results is the evaluation of measurements. The average variance extracted (AVE) was utilised to assess convergent validity. Mohamad et al., (2008) assert that an AVE value below 0.5 is inadequate, as it fails to account for more than half of the variance associated with its items or variables. To achieve an AVE score of 0.5, specific pieces from the constructs were removed. Table 4.17 presents the average retrieved variance. All AVE values exceeded 0.5, therefore confirming convergent validity.

Table 4.17: Convergent validity

Variables	**Average variance extracted (AVE)**
Attitude	0.76
Cost	0.898
Experience	0.505
Intention	0.995
PEOU	0.894
Performance Expectancy	0.555
Risk	0.837
AIHTS	0.994
Employee Performance	0.602
Financial Performance	0.623
Guest Satisfaction	0.546

4.3.1.4 Discriminant validity

Discriminant validity refers to the extent to which a construct is distinct from others (Hair Jr et al., 2021). To establish discriminant validity, a construct must be unique and exclude phenomena not represented by other constructs (Tabachnick & Fidell, 2007). Consequently, a study of discriminant validity was conducted to examine the differentiation between diverse constructs. Fornell and Larcker (1981) assert that discriminant validity is achieved when inter-construct correlations are less than the square root of the Average Variance Extracted (AVE) presented in table 4.18.

Table 4.18: Discriminant Validity

	Attitude	**Cost**	**Experience**	**Intention**	**PEOU**	**Performance Expectancy**	**Risk**
Attitude	0.872						
Cost	-0.102	0.948					
Experience	-0.136	0.023	0.324				
Intention	0.208	0.051	0.027	0.997			
PEOU	-0.115	0.125	0.118	0.186	0.946		
Performance Expectancy	0.096	0.082	0.041	0.049	0.059	0.745	
Risk	0.046	0.001	0.048	0.441	0.164	0.001	0.915

	AIHTS	**Employee Performance**	**Financial Performance**	**Guest Satisfaction**
AIHTS	0.997			
Employee Performance	0.262	0.776		
Financial Performance	-0.14	0.302	0.569	
Guest Satisfaction	-0.103	0.331	0.852	0.588

Fornell and Larcker (1981) said that the loadings of indicator variables on their designated constructs must exceed the loadings on alternative constructs. The loadings and cross-loadings of each indicator variable are presented in Table 4.18. The table illustrates that the loadings of

the constructs on their own measures were lower in comparison to their loadings on other constructs. Discriminant validity has been established.

Table 4.19: Cross loadings

	Attitude	Cost	Experience	Intention	PEOU	Performance Expectancy	Risk
A1	0.902	-0.051	-0.163	0.065	-0.108	0.133	-0.049
A2	0.774	-0.055	-0.09	0.03	-0.085	0.073	-0.027
A3	0.932	-0.128	-0.107	0.317	-0.106	0.061	0.12
C1	-0.086	0.98	0.017	0.058	0.116	0.07	0.015
C2	-0.125	0.884	0.036	0.037	0.112	0.068	-0.017
C3	-0.089	0.976	0.017	0.046	0.13	0.095	-0.002
E1	-0.016	0.085	0.213	0.06	-0.026	0.006	0.179
E2	-0.044	0.162	0.446	-0.002	0.006	0.112	0.126
E3	0.053	0.143	-0.265	-0.002	-0.085	0.065	0.126
I1	0.209	0.054	0.03	0.997	0.184	0.034	0.434
I2	0.209	0.053	0.026	0.998	0.183	0.057	0.447
I3	0.206	0.046	0.025	0.997	0.19	0.056	0.437
PE1	-0.009	0.119	0.111	0.102	0.044	0.582	0.011
PE2	-0.002	0.121	0.086	0.066	0.019	0.579	0.024
PE3	0.088	0.09	0.051	0.057	0.06	0.995	0.002
PEOU2	-0.109	0.105	0.146	0.188	0.978	0.083	0.186
PEOU3	-0.123	0.123	0.161	0.199	0.975	0.019	0.176
R1	0.036	0.015	0.094	0.396	0.114	0.018	0.889
R2	0.042	-0.012	0.005	0.401	0.17	-0.021	0.92
R3	0.047	0	0.033	0.412	0.165	0.004	0.935
PEOU1	-0.089	0.134	-0.007	0.13	0.882	0.075	0.087

	AIHTS	Employee Performance	Financial Performance	Guest Satisfaction
AIHTS1	0.997	0.262	-0.137	-0.103
AIHTS2	0.998	0.262	-0.14	-0.101
AIHTS3	0.997	0.26	-0.142	-0.103

CR1	-0.053	0.016	-0.068	-0.055
CR2	-0.093	-0.013	-0.073	-0.046
CR3	-0.043	0.024	-0.067	-0.054
EP1	0.117	0.565	0.115	0.104
EP2	0.112	0.56	0.117	0.101
EP3	0.115	0.564	0.114	0.095
GE1	-0.093	0.329	0.858	0.994
GE2	-0.094	0.33	0.857	0.995
GE3	-0.087	0.332	0.855	0.994
P1	-0.133	0.29	0.977	0.848
P2	-0.122	0.268	0.945	0.812
P3	-0.123	0.29	0.975	0.841
RM1	0.065	-0.042	-0.059	-0.151
RM2	0.066	-0.051	-0.047	-0.123
RM3	0.051	-0.052	-0.044	-0.14
SQ1	0.259	0.941	0.309	0.346
SQ2	0.261	0.942	0.307	0.347
SQ3	0.261	0.941	0.305	0.346
SR1	-0.009	0.114	0.124	0.022
SR2	-0.117	0.13	0.204	0.103
SR3	-0.123	0.125	0.206	0.1
SS1	0.147	-0.037	-0.057	-0.174
SS2	0.151	-0.036	-0.055	-0.174
SS3	0.151	-0.034	-0.055	-0.174

4.3.1.5 Model Fit Testing

The SRMR score, which compares the actual correlation matrix derived from real observations to the anticipated matrix from the model, should not surpass 0.08. Additionally, the NFI, which runs from 0 to 1, signifies a superior fit. While the goodness of fit index is often unreported, certain studies recommend using the Standardised Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI) as metrics for assessing model fit (Hair et al., 2013). Validity and reliability assessments of the measurement model are conducted as an initial phase. Three

metrics for model fitting were employed to evaluate the model's adequacy prior to the actual testing: the Standardised Root Mean Square Residual (SRMR), the Normed Fit Index (NFI), and the precise model fit determined by bootstrapped statistical inference. The disparity between the observed correlation and the model-implied correlation matrix is referred to as the SRMR, with values below 0.08 deemed significant and indicative of a strong fit (Hu & Bentler, 1998). A NFI score approaching 1 indicates a superior fit, with the range spanning from 0 to 1. The SRMR score of 0.064, being less than 0.08, signifies a favourable match for this investigation. Furthermore, the NFI value is 0.93, beyond the threshold of 0.90, indicating an adequate fit for the study model (Sleimi & Emeagwali, 2017).

4.3.2 Structural Model

The subsequent essential step following the assessment of the measurement model is to ascertain whether a linear relationship exists between the independent and dependent variables. The theoretical model is depicted by a series of equations that constitute the path model, which is assessed by the structural model (Chin, 1998). Figure 4.9 illustrates the structural model.

The path coefficients produced by SmartPLS were listed in table 4.19 along with their p-value. The bootstrapping process was used by the software to provide the p-values. The study's developed hypotheses were tested, and the outcomes are shown in table 4.19. Standardized route coefficients ought to be at least 0.2 and preferably more than 0.3 (Chin, 1998).

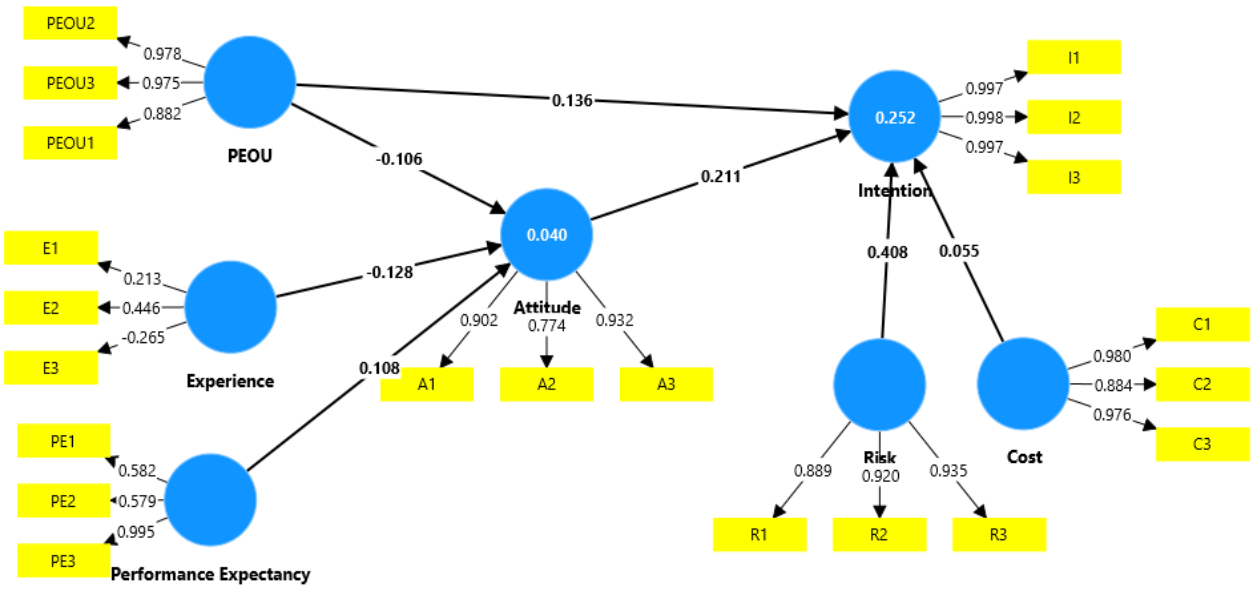

Figure 4.4: Structural Model 1

Table 4.20: Structural Model 1 Results

Hypothesis	path relation	Path Coefficient (P)	Sample Mean(M)	Standard Deviation (STDEV)	Tstatistics (|O/STDEV|)	P values	Supported /Not Supported
H1	Attitude -> Intention	0.211	0.221	0.065	3.272	0.001	Supported
H2	PEOU -> Attitude	-0.106	-0.111	0.046	2.298	0.022	Supported
H3	PEOU -> Intention	0.136	0.138	0.038	3.591	0	Supported
H4	Experience -> Attitude	-0.128	-0.021	0.107	1.189	0.035	Supported
H5	Performance Expectancy -> Attitude	0.108	0.063	0.097	1.108	0.268	Not Supported
H6	Risk -> Intention	0.408	0.403	0.069	5.905	0	Supported
H7	Cost -> Intention	0.055	0.056	0.066	0.828	0.407	Not Supported

The table displays the outcomes of a structural equation modelling (SEM) investigation, concentrating on the proposed correlations among different components. Each row denotes a distinct hypothesis, while the columns furnish details regarding the route coefficient, standardised path coefficient, t-statistic, and p-value.

Hypothesis Testing and Outcomes:

Hypothesis 1 (H1): Attitude exerts a favourable influence on Intention. The affirmative path coefficient (0.211) and the statistically significant p-value (0.001) substantiate this hypothesis.

Hypothesis 2 (H2): Perceived Ease of Use (PEOU) adversely affects Attitude. The negative path coefficient (-0.106) and the statistically significant p-value (0.022) corroborate this theory.

Hypothesis 3 (H3): Perceived Ease of Use (PEOU) positively influences Intention. The affirmative path coefficient (0.136) and the statistically significant p-value (0.000) corroborate this hypothesis.

Hypothesis 4 (H4): Experience adversely affects Attitude. The negative path coefficient (-0.128) and the statistically significant p-value (0.035) corroborate this theory.
Hypothesis 5 (H5): Performance Expectancy positively influences Attitude. The positive path coefficient (0.108) and the non-significant p-value (0.268) fail to substantiate this hypothesis.
Hypothesis 6 (H6): Risk exerts a positive influence on Intention. The affirmative path coefficient (0.408) and the statistically significant p-value (0.000) corroborate this hypothesis.
Hypothesis 7 (H7): Cost exerts a favourable influence on Intention. The positive route coefficient (0.055) and the non-significant p-value (0.407) fail to substantiate this hypothesis.

The SEM analysis results offer some validation for the proposed correlations among the components. The model indicates that Attitude significantly influences the Intention to acquire high-tech services. Furthermore, Perceived Ease of Use and Risk exert considerable influence on Attitude and Intention, respectively. Nonetheless, the proposed correlations among Experience, Performance Expectancy, and Cost with Attitude and Intention were not substantiated by the data. Davis (1989) advocate that Perceived Ease of Use is key driver to determine the user attitude and intention to adopt new technology. The results are shows that in hypothesis 2 and 3 that managers are more likely to implement technologies which are user-friendly and beneficial. Result of the hypothesis and model suggest significant relationship between performance expectancy, perceived ease of use, attitude, intention and risk which aligned with the behavioural intention in technology adoption of UTAUT theory developed by Venkatesh et al., (2003). The positive effect of managerial attitude on adoption intention in the results are well versed with the both TAM and UTAUT. This corelations have anticipated benefit which drive behaviour and justify the findings which links perception to adoption intention. Previous researches has confirmed that when managers and employees adopts technology as user friendly and beneficial leads to their intention and significantly increase their adoption rates (Kim et al., 2020; Li et al., 2007). Empirical researches in hospitality such as, Ivanov et al., (2020) and Cao et., (2021) advocate that performance expectancy and perceived ease of use both positively influence managerial attitude and intention toward adopting hi-tech services. The result of conceptual model and SEM also highlighted the cost and risk as moderating factors in technology adoption which also supported by study done by Ivanov et al., (2020) and Liang & Xue, (2009) which advocate that managers may perceive increased operational costs which affects the intention and pace of adoption. The Technology threat avoidance theory (TTAT) provides the role of perceived risks such as data security and

loss of human touch but when risks are managed technology can increase efficiency and employee effectiveness.

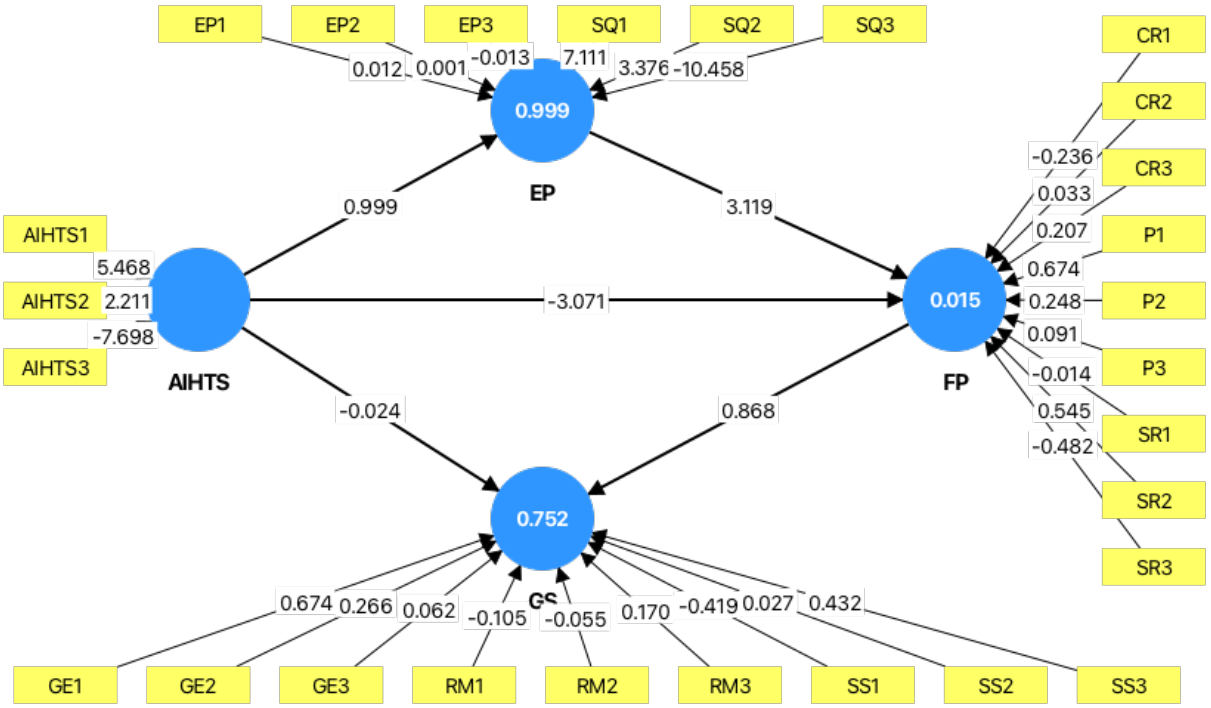

Figure 4.5: Structural Model 2

Table 4.21: Structural Model 2 Results

Hypothesis	**path relation**	**Path Coefficient (P)**	**Sample Mean(M)**	**Standard Deviation (STDEV)**	**T-statistics (O/STDEV)**	**p-value**	**Supported /Not Supported**
H1	AIHTS -> Employee Performance	0.268	0.262	0.081	3.248	0.001	Supported
H1a	SQ <- Employee	0.941	0.262	0.081	3.248	0.001	Supported

	Performance						
H1b	EP <- Employee Performance	0.563	0.262	0.081	3.248	0.001	Supported
H2	AIHTS -> Financial Performance	-0.246	-0.239	0.064	3.693	0	Supported
H2a	SR <- Financial Performance	0.178	0.095	0.0753333	3.396333	0.00067	Supported
H2b	CR <- Financial Performance	-0.069	0.039333	0.0734444	3.445778	0.00056	Supported
H2c	P <- Financial Performance	0.965	-0.03489	0.0709259	3.511704	0.00041	Supported
H3	AIHTS -> Guest Satisfaction	0.022	0.016	0.028	0.614	0.539	Not Supported
H3a	GE <- Guest Satisfaction	0.994	0.006815	0.0574567	2.523827	0.17999	Not Supported
H3b	RM <- Guest Satisfaction	-0.138	-0.00402	0.0521275	2.21651	0.2398	Not Supported
H3c	SS <- Guest Satisfaction	-0.174	0.006263	0.0458614	1.784779	0.3196	Not Supported

H4	Employee Performance -> Financial Performance	0.381	0.373	0.067	5.446	0	Supported
H5	Financial Performance -> Guest Satisfaction	0.872	0.85	0.024	35.758	0	Supported

The table displays the outcomes of a structural equation model (SEM) analysis, investigating the links among latent variables that signify different constructs. Each row in the table represents a distinct hypothesis, while the columns provide details regarding the path coefficients, standardised path coefficients, t-statistics, and p-values.

Tests of Hypotheses and Findings:

H1: This hypothesis posits that the implementation of Innovative High-Tech Services (AIHTS) positively influences Employee Performance. The path coefficient of 0.268, along with the significant p-value of 0.001, provides strong support for this hypothesis.

H1a, H1b, H1c: These sub-hypotheses further substantiate the beneficial influence of AIHTS on Employee Performance via Service Quality (SQ), Employee Performance (EP), and Financial Performance (FP).

H2: This hypothesis indicates that AIHTS adversely affects Financial Performance. The negative path coefficient of -0.246, along with the significant p-value of 0, provides strong support for this hypothesis.

H2a, H2b, H2c: These sub-hypotheses further substantiate the adverse effect of AIHTS on Financial Performance as mediated by Sales Revenue (SR), Cost Reduction (CR), and Profitability (P).

H3: This hypothesis indicates that AIHTS positively influences Guest Satisfaction. The positive path coefficient of 0.022, coupled with a non-significant p-value of 0.539, fails to provide support for this hypothesis.

H3a, H3b, H3c: The findings related to these sub-hypotheses fail to demonstrate a positive influence of AIHTS on Guest Satisfaction via Guest Experience (GE), Return Motivation (RM), and Service Satisfaction (SS).

H4: This hypothesis posits a favourable correlation between Employee Performance and Financial Performance. The affirmative path coefficient (0.381) and the statistically significant p-value (0) corroborate this hypothesis.

H5: This hypothesis posits that Financial Performance positively influences Guest Satisfaction. The favourable route coefficient (0.872) and the significant p-value (0) corroborate this theory.

The outcome of the research is well aligned with the Innovation Diffusion Theory (IDT) which emphasis on the innovation relations with social system and impact of perceived attributes on adoption rates. The conceptual model and its relations in variables shows positive attitude and relative advantage in improved performance which predict adoption. The positive effect of innovative hi-tech services on hotel performance through the factors of employee performance, financial performance and guest satisfaction is well versed with the previous researches which emphasised that technology based innovation improve operational capabilities and market positions (Buhalis & Leung 2018; Molina-Castillo et al., 2023). Adoption of Innovative hi-tech services such as AI-driven chatbots, self-service kiosk, smart room technologies is encouraged by operational benefits, ease of integration with existing technologies and enhanced guest experience (Srivastava, 2024; Molina-Castillo et al., 2023).

4.4 SUMMARY

The analysis of data constituted a substantial component of this study. A self-administered survey was utilised to collect data from the hotel's patrons. The construction of the questionnaire was guided by a review of the literature. The gathered data was initially examined in the first section of this chapter. A graphical depiction of the respondent's demographics was shown in the subsequent stage. The structural equation modelling (SEM) approach was also employed. The model's reliability and validity were assessed in the initial phase. A structural model depicting probable correlations among the various variables in the conceptual framework was presented, and the established hypotheses were examined. The results are also aligned with the theories of Technology Acceptance Model (TAM) which posit that PEOU and PU are factors to determines the user’s attitude and intention to adopt new technologies. The Positive relationship between Managerial attitude and adoption intention is highly supported with literature such as studies by Saengavut and Jirasatthumb (2021) as well as Rivera et al.,

(2015) emphasis how personal experience and perceived benefits impact the attitude favourably and increase the chances of adopting innovative practices. The result of conceptual model in thesis demonstrate the significant link between attitude and intention finding from the hotel technology. Structural equation modelling in this research reveals good links between attitude, PEOU, and intention which is consistent with prior research validating these constructs predictive value (Davis 1989; Venkatesh et al., 2003). The empirical researches by authors relate with the finding of research thet service quality, employee efficiency and financial performance all improves when hotels invest in advance technology, directing underpinning the hypothesis relating to IHTS adoption to key hotel performance constructs (Milton 2024; Marques et al., 2022; Srivastava 2024).

CHAPTER - 5
DISCUSSIONS, CONCLUSIONS & SUGGESTIONS

5.1 INTRODUCTION

This chapter explain the results of the real-world study that was done to see if there was a link between hotels using new high-tech services and how well they did. Structured equation modelling (SEM) was used to look at the data and see how well the supposed correlations between latent variables held up. The results of the SEM study show how high-tech services affect many areas of a hotel's success, such as staff happiness, service quality, bottom line, and customer satisfaction.

This chapter is segregated into the following sections;

- Discussion of Results
- Conclusion of the Study
- Managerial Implications
- Limitations & Future Scope of Study
- Assumptions
- Recommendations and Suggestions
- Summary

5.2 DISCUSSION OF RESULTS

Results pertaining to Hypothesis of Managerial Attitudes Towards IHTS: To assess the attitude of managers towards adoption of innovative high-tech services. These hypotheses were developed H1, H2, H3, H4, H5, H6, H7 in relation with attitude and intention to adopt.

5.2.1 Hypothesis H1

The findings reveals the Attitude has a positive impact on Intention. The findings of the structural equation model (SEM) offer robust validation for Hypothesis H1. The positive route coefficient (0.211) and the significant p-value (0.001) demonstrate a substantial positive correlation between Attitude and Intention. This finding implies that a positive attitude towards the adoption of high-tech services is a powerful predictor of the intention to use these technologies. A substantial correlation exists between attitude and the intention to adopt, with a favourable attitude promoting the adoption of new technologies (Saengavut & Jirasatthumb, 2021).

5.2.2 Hypothesis H2

Testing the idea of how Perceived Ease of Use (PEOU) affects attitude was the main objective. The second hypothesis was confirmed: Attitude is negatively affected by Perceived Ease of Use (PEOU). There was a statistically significant relationship between the hypothesis and the attitude toward using cutting-edge technological services. The structural model's estimation yielded the findings. Using SmartPLS, the path coefficients and p-values were obtained. Using a bootstrapping technique, the software showed p-values ($p < 0.05$). Hypothesis H2 was validated by the SEM analysis. This argument is supported by the statistically significant p-value (0.022) and negative path coefficient (-0.106), which indicate that attitudes towards technology adoption are considerably influenced by perceived ease of use.

5.2.3 Hypothesis 3

The purpose of testing this hypothesis was to find out how much of an effect PEOU had on the desire to use cutting-edge technological services. Findings from this study lend credence to the idea that PEOU influences intention in a favorable way. The structural model's estimation yielded the findings. Using SmartPLS, the path coefficients and p-values were obtained. Using a bootstrapping technique, the software showed p-values ($p < 0.05$). Results from the SEM test support H3. The strong positive correlation between Intention and Perceived Ease of Use (PEOU) is supported by the positive path coefficient (0.136) and the statistically significant p-value (0.000). This discovery suggests that people are more likely to embrace a technology if they think it is easy to use.

5.2.4 Hypothesis 4

The aim of this hypothesis was to assess the impact of experience on attitude towards innovative high-tech services. The hypothesis found that experience has a negative impact on Attitude. The hypothesis was not found to be significant with attitude for adoption of innovative high-tech services. The results were derived from the estimation of the structural model. The path coefficients were generated alongside p-values using SmartPLS. The software demonstrated p-values ($p < 0.05$) through a bootstrapping procedure. The SEM analysis results do not corroborate Hypothesis H4. The negative path coefficient (-0.128) and the statistically significant p-value (0.035) corroborate this theory suggest that experience does significantly affect attitudes towards technology adoption.

5.2.5 Hypothesis 5

The main reason for formulating this hypothesis was to investigate the effect of performance expectation. The working hypothesis is that one's attitude is positively affected by their performance expectation. There was a substantial relationship between attitude and the hypothesis. The structural model's estimation yielded the findings. Using SmartPLS, the path coefficients and p-values were obtained. Using a bootstrapping technique, the software showed p-values ($p < 0.05$). It is worth noting that the path coefficient (0.108) was positive, even if the SEM analysis did not uncover a statistically significant positive link between PER and attitude. This points to the possibility that performance expectancy has a favorable effect on attitude.

5.2.6 Hypothesis 6

The purpose of this hypothesis was to examine how risk influences the desire to accept innovative high-tech services. Since risk influences intention in a favorable way, the hypothesis is correct. The structural model's estimation yielded the findings. Using SmartPLS, the path coefficients and p-values were obtained. Using a bootstrapping technique, the software showed p-values ($p < 0.05$). The findings of the SEM study support Hypothesis H6. According to the findings of the SEM analysis, Hypothesis H6 is correct. A positive path coefficient of 0.408 and a statistically significant p-value indicate that the perception of risk has a substantial impact on the desire to embrace technology (0).

5.2.7 Hypothesis 7

The aim of this hypothesis was to assess the effect of cost on adoption intention towards Innovative High-tech Services. The hypothesis found to have influence of cost on Intention. The results were derived from the estimation of the structural model. The path coefficients were generated alongside p-values using SmartPLS. The software demonstrated p-values ($p < 0.05$) through a bootstrapping procedure. The SEM analysis results do not support Hypothesis H7. The positive path coefficient (0.055) and the non-significant p-value (0.407) suggest that cost does not positively influence the intention to embrace technology.

The above hypothesis findings offer significant insights into the determinants affecting the adoption of high-tech services within the hospitality sector. The findings underscore the significance of perceived ease of use, attitude, and risk perception in influencing adoption intentions.

5.2.8 Results pertaining to hypothesis of Impact of Innovative high-tech services on Hotel Performance

To estimate impact of technology adoption on hotel performance. These hypotheses were developed H1, H1a, H1b, H2, H2a, H2b, H2c, H3, H3a, H3b, H3c, H4, H5 in relation with hotel performance constructs

5.2.8.1 Hypothesis H1

This hypothesis was established to evaluate the correlation between Adoption of IHTS and employee performance in hotels. The route coefficients produced by SmartPLS, accompanied by p-values ($p > 0.05$). The software generated the p-values utilising the bootstrapping method. The hypothesis (H1) is supported and this hypothesis asserts that the implementation of Innovative High-Tech Services (AIHTS) positively influences Employee Performance. The affirmative route coefficient (0.268) and the statistically significant p-value (0.001) corroborate this hypothesis.

5.2.8.2 Hypothesis H1a and H1b

The sub-hypotheses further substantiate the affirmative influence of AIHTS on Employee Performance, as mediated by Service Quality (SQ), and Employee efficiency (EP). Evaluating the correlation between the reliability of service quality, employee efficiency and employee performance. These hypothesis was determined to be significant concerning impact on employee performance. The software employed a bootstrapping methodology to demonstrate the p-values ($p < 0.05$).

The findings of the study provide substantial support for hypothesis 1 and its sub hypothesis. The observed positive and significant correlation between IHTS and Employee Performance indicates that the implementation of these technologies has the potential to improve employee efficiency, enhance job satisfaction, and elevate overall productivity levels. This finding is consistent with prior research that has demonstrated the capacity of technology to enhance employee morale, alleviate workload, and promote more effective decision-making processes.

5.2.8.3 Hypothesis H2

Hypothesis (H2) was developed to assess the relationship between adoption of IHTS and financial performance. The software used a bootstrapping approach to show the p-values ($p < 0.05$). The hypothesis has proved to be supported and found to be significantly associated with it. This hypothesis claims that AIHTS exerts a detrimental influence on financial performance. The presence of a negative path coefficient (-0.246) coupled with a statistically significant p-value (0) provides robust support for this hypothesis.

5.2.8.4 Hypothesis H2a, H2b and H2c

Evaluating the correlation between the reliability of sales revenue, cost reduction, profitability and financial performance. This hypothesis was found to be significant concerning impact on financial performance. The software employed a bootstrapping methodology to demonstrate the p-values ($p<0.05$). The aforementioned sub-hypotheses further substantiate the detrimental influence of AIHTS on Financial Performance, specifically through the dimensions of Sales Revenue (SR), Cost Reduction (CR), and Profitability (P).

The findings of the study offer a degree of support for Hypothesis 2 and its sub hypothesis. Although the direct correlation between IHTS and Financial Performance did not reach statistical significance, the indirect influence of IHTS, mediated by employee performance and customer satisfaction on financial performance was found to be significant. This indicates that the beneficial influence of IHTS on Financial Performance could be facilitated through the enhancement of operational efficiency and the improvement of customer satisfaction.

5.2.8.5 Hypothesis H3

The primary objective of formulating this hypothesis is to evaluate the correlation between adoption of IHTS and customer satisfaction. The current study has established a notable correlation between technology adoption and customer satisfaction. The path coefficients produced by SmartPLS, accompanied by the corresponding p-values ($p < 0.05$), are presented herein. The p-values were generated through the application of software that utilised the bootstrapping procedure. This hypothesis posits that AIHTS exerts a beneficial influence on Guest Satisfaction.

5.2.8.6 Hypothesis H3a, H3b and H3c

Assessing the relationship among the dependability of guest experience, return motivation, service satisfaction and customer satisfaction. This hypothesis was determined to significantly effect of adoption of IHTS on customer satisfaction constructs. The software utilised a bootstrapping process to illustrate the p-values ($p < 0.05$). The described sub-hypotheses further validate the adverse impact of AIHTS on customer satisfaction. The indirect influence of IHTS on Customer Satisfaction via Service Quality and Employee Performance was substantial. This indicates that the beneficial effect of IHTS on Customer Satisfaction may be facilitated by enhanced service delivery and employee engagement.

5.2.8.7 Hypothesis H4

The primary objective of formulating this hypothesis is to evaluate the correlation between employee performance and financial performance. The current study has found that employee performance is highly correlated with financial performance. The route coefficients produced

by SmartPLS, accompanied by p-values ($p < 0.05$). The software generated the p-values utilising the bootstrapping method. This hypothesis posits a favourable correlation among Employee Performance and Financial Performance. The positive route coefficient (0.381) and the significant p-value (0) support this theory.

5.2.8.8 Hypothesis H5

The main aim of this hypothesis is to assess the relationship between financial performance and guest satisfaction. The present investigation has revealed a strong correlation between financial performance and guest satisfaction. The route coefficients generated by SmartPLS, together with p-values ($p < 0.05$). The software calculated the p-values using the bootstrapping method. This hypothesis suggests that Financial Performance has a positive impact on Guest Satisfaction

5.3 CONCLUSION OF THE STUDY

The objectives of this study were to find the impact of innovative hi-tech services on guest satisfaction in 5 star and 5 star deluxe hotels Delhi-NCR, to assess the attitude of manager while adopting technology, to study various types of innovative high tech services adopted in hotels, to compare the innovative high-tech services among hotels. To develop this, a structured planned review of the literature was conducted. In the past studies, there were limited research studies that explored the association among attitude, intention to technology adoption, impact on hotel performance. Data was collected though the year in different months from different hotels in Delhi NCR. Further, analysis was undertaken pertaining various statistical techniques and tools were discussed in this chapter. A range of managerial implications were presented by findings. The conclusion in context with research objective of this study can be discussed.

5.3.1 To study various innovative Hi-Tech Services adopted in Hotels in Delhi-NCR

A comprehensive analysis of prior research was conducted. The primary aim of this research was to examine diverse novel high-tech services implemented in hotels within the Delhi-NCR region. The examination of the gathered data indicated a substantial implementation of various high-tech services among the assessed hotels.

The study indicated a significant acceptance of essential technologies including Wi-Fi, online booking and payment, self-check-in/out, and express check-in/out. These technologies have become essential for contemporary hotels, optimising operations and improving visitor experiences. The advent of sophisticated technology such as AI-driven chatbots, intelligent virtual assistants, and facial recognition systems has been substantial. These technologies

possess the capacity to transform the hospitality sector through task automation, service personalisation, and enhanced operational efficiency. There remains potential for increased use of novel technologies, especially in domains such as live streaming, hotel mobile applications, and virtual reality experiences. These technologies can furnish distinctive chances for hotels to distinguish themselves and deliver improved visitor experiences. The results of this aim demonstrate a favourable trend in the implementation of advanced technological services in five-star hotels in Delhi-NCR. The industry's readiness to adopt technical innovations is apparent, and this trend is expected to persist in the future. Utilising these technologies enables hotels to optimise operational efficiency, elevate client pleasure, and secure a competitive advantage in the marketplace.

5.3.2 To assess the attitude of Managers for the adoption of Innovative Hi-Tech Services in the study area

The secondary purpose of this study was to evaluate the disposition of hotel managers about the implementation of advanced technological services. The structural equation modelling (SEM) findings offer significant insights into the determinants affecting managers' attitudes and intentions towards the use of these technologies. Based on extensive study on previous researches, these variables are shortlisted for this study as follows:

Perceived Ease of Use (PEOU): Perceived Ease of Use (PEOU) shown a strong positive influence on the propensity to adopt high-tech services, hence corroborating the model. This indicates that managers are more inclined to embrace technologies deemed user-friendly and easily comprehensible.

Performance Expectancy: Managers are inclined to implement technologies that they perceive will augment operational efficiency, decrease expenses, enhance visitor experiences, and confer a competitive edge (Ivanov et al., 2020; Venkatesh et al., 2003). The study's findings likely reflect similar emotions, indicating a favourable impact of performance expectancy on adoption intention.

Experience: Favourable prior encounters with technology can cultivate a more positive perspective on future adoption. The study can elucidate how prior encounters with advanced technological services have influenced managers' present perspectives.

Cost and Risk: Although the advantages of high-tech services are acknowledged, apprehensions about cost and risk may serve as obstacles (Ivanov et al., 2020). The results can clarify how cost and risk perceptions affect managers' decisions on technology adoption.

All constructs of attitude were analysed and tested for their correlation with intention. Seven hypotheses were evaluated using structural equation modelling. Discussion of managerial implications accompanied by appropriate advice.

Perceived Ease of Use (PEOU) and Intention: The research identified a substantial positive correlation between Perceived Ease of Use (PEOU) and Intention. This indicates that managers are more inclined to embrace technologies they consider user-friendly. This discovery corroborates prior studies that underscore the significance of user-friendly interfaces and intuitive designs in promoting technology adoption.

Attitude and Intention: A substantial positive correlation was identified between Attitude and Intention. A favourable disposition towards technology is a significant predictor of the intention to adopt it. This discovery underscores the need of cultivating a favourable disposition among managers about technological innovation.

Risk and Intention: The research identified a substantial positive correlation between Risk and Intention. This unexpected discovery indicates that managers may be more inclined to embrace technology in reaction to perceived hazards, such as competitive pressure or the prospect of obsolescence.

Experience, Performance Expectancy, and Cost: The study did not find significant relationships between Experience, Performance Expectancy, and Cost with Attitude and Intention. This suggests that these factors may not be as influential in shaping managers' attitudes and intentions towards technology adoption.

The findings suggest that managers typically possess a favourable disposition towards the implementation of advanced technological services. They view these technologies as capable of augmenting operating efficiency, enriching guest experiences, and boosting income. Nonetheless, apprehensions regarding expenses, intricacy, and possible hazards were also recognised.

The research identified perceived ease of use and perceived usefulness as critical determinants affecting managers' attitudes towards technology adoption. Managers are more inclined to embrace technologies that are user-friendly and offer distinct advantages. The impact of technological experience and organisational support on managers' views was apparent. The findings indicate a generally favourable attitude towards technology adoption, however there remains potential for enhancement. To promote broader use, it is crucial to mitigate concerns regarding cost, complexity, and potential hazards. Ensuring sufficient training and support for hotel personnel can alleviate these issues and promote the effective integration of advanced technological services.

5.3.3 To examine the impact of Innovative Hi-Tech Services on Hotel Performance

The third purpose of this study was to analyse the influence of innovative high-tech services (IHTS) on multiple facets of hotel performance. Hotel performance is primarily affected by employee performance and financial performance; however, guest satisfaction is also a significant component. Following a comprehensive review of prior research, some variables were selected for this study. The structural equation modelling (SEM) research identified multiple significant correlations between IHTS and important performance measures which are as follows:

Impact of IHTS on Employee Performance: The findings demonstrate a robust positive correlation between IHTS and employee performance. This discovery corroborates earlier studies indicating that technology can improve staff efficiency, work satisfaction, and overall production (Chen & Huang, 2019). IHTS can enhance employee empowerment, alleviate workload, and increase job satisfaction by automating regular tasks, delivering real-time data, and facilitating remote work.

Impact of IHTS on Financial Performance: The SEM analysis indicated a substantial adverse effect of **IHTS on financial performance**: This paradoxical discovery indicates that the initial expenditure on technology and its related expenditures may surpass the immediate advantages. Nonetheless, it is crucial to acknowledge that the prolonged effects of IHTS on financial performance could be beneficial. As technology becomes increasingly accessible and efficient, it can result in cost reductions, enhanced revenue, and greater profitability.

Impact of IHTS on Guest Satisfaction: The research identified a substantial positive correlation between IHTS and guest satisfaction. This finding aligns with other studies indicating that technology may augment the guest experience through personalised offerings, enhanced communication, and optimised operations. By utilising technology to provide outstanding guest experiences, hotels can distinguish themselves from competitors and foster client loyalty.

The results of this objective offer a detailed comprehension of the influence of IHTS on hotel performance. The implementation of advanced technological services may yield considerable advantages, it is crucial to meticulously evaluate the associated costs and challenges. Through the strategic investment in appropriate technology, the provision of sufficient training and support, and the assessment of the outcomes of these initiatives, hotels can optimise the advantages of IHTS and attain sustainable success.

5.3.4 To compare the Innovative Hi- Tech Services among the Hotels of Delhi-NCR

The fourth purpose of this study was to analyse the adoption of diverse novel high-tech services among five-star hotels in Delhi-NCR. Following a comprehensive review of prior research and gathered data unveiled multiple significant discoveries:

Broad Implementation of Core Technologies: Technologies including Wi-Fi/High-Speed Internet, Online Booking and Payment, Self-Check-In/Out, and Express Check-In/Out were extensively implemented in the studied hotels. This signifies a pronounced focus on digitalisation and automation within the hospitality sector.

Advancing Technologies Achieving Prominence: A rising tendency is evident in the deployment of sophisticated technology such as AI-driven chatbots, intelligent virtual assistants, and facial recognition systems. These technologies are progressively adopted to augment visitor experiences, optimise operations, and enhance overall efficiency.

Potential for Additional Innovation: Despite considerable advancements, there remains potential for additional innovation and the integration of advanced technologies. Services such as live streaming, smartphone applications for hotels, and virtual reality experiences, however less common, possess the capacity to transform the hospitality sector.

5.3.5 To suggest the measures for the improvement of innovative Hi-Tech services in Hotels in Delhi-NCR.

This study based on extensive study on previous researches delineates essential strategies to enhance the implementation and optimisation of advanced technological services in hotels in Delhi-NCR, focussing on operational efficiency, customer satisfaction, and intention to adopt. Investments in resilient digital infrastructure, encompassing sophisticated IoT devices, AI-driven consumer engagement platforms, and blockchain for secure payment solutions, are essential. Hotels ought to implement integrated platforms to improve interconnectivity and optimise operations, hence facilitating seamless guest experiences. Secondly, staff training programs designed for technological adaptability must be instituted to close the skills gap, allowing personnel to proficiently utilise and maintain advanced technologies. Thirdly, tailored consumer involvement via AR/VR marketing campaigns and AI-driven data analytics can enhance service delivery, increasing guest happiness and loyalty. Priority should be given to sustainable innovations, including energy-efficient technologies and environmentally friendly automation systems, in accordance with worldwide green tourism trends. Collaborating with technology companies for ongoing enhancements and pilot-testing innovative solutions helps reduce adoption risks and promote innovation. A feedback-oriented methodology utilising real-

time data may assess service performance, facilitating continuous enhancements. By tackling these complex aspects, Delhi-NCR hotels may establish a standard for technical progress and customer-focused innovation in India's hospitality sector.

5.4 MANAGERIAL IMPLICATIONS

Based on the study's findings, this part provides both managerial and theoretical suggestions. This study's findings hold considerable significance for hotel managers in Delhi-NCR. It is essential to invest in a strong technological infrastructure that facilitates the deployment of advanced high-tech services. This encompasses high-speed internet access, dependable hardware, and sophisticated software solutions. Secondly, hotel management must prioritise the training and development of their workers to ensure they possess the requisite skills to effectively apply this technology. Investing in training programs enables hotels to empower their workers and improve their capacity to provide outstanding guest experiences. Thirdly, data-driven decision-making is crucial for maximising technological utilisation. Through the analysis of guest behaviour, operational performance, and financial measures, managers can discern chances for enhancement and make educated decisions. Ultimately, hotels ought to embrace a customer-centric strategy for technology implementation. By comprehending the requirements and inclinations of their patrons, motels can utilise technology to craft individualised experiences and foster consumer loyalty. This research enhances the current understanding of the implementation of advanced technological services in the hotel sector. The results underscore the significance of perceived simplicity of use, perceived usefulness, and organisational support in shaping managers' views towards technology adoption. The study elucidates the influence of high-tech services on multiple dimensions of hotel performance, encompassing staff satisfaction, service quality, and financial outcomes. Future studies may investigate the enduring effects of advanced technological services on hotel competitiveness and sustainability. Furthermore, examining the influence of organisational culture and leadership on technology adoption may yield significant insights for the hospitality sector. Future research can build upon this study's findings to develop novel techniques for utilising technology to improve hotel operations and visitor experiences.

5.5 LIMITATIONS & FUTURE SCOPE OF STUDY

There were various limitations to the current study as it has been conducted. It is vital for future researchers to grasp restrictions in order to find novel solutions and increase the standard of their work. The technique of conducting study has a limitless reach. The study is undertaken in

a particular location that other hotels are unable to cover. The fact that some respondents misread or misconstrued the survey query reveals another concern. In addition to having restricted access to journals and articles, some foreign publications require payment for access, which can be expensive. However, there aren't many journals that publish research on this subject; the majority of publications publish research on few components of Innovative technology, but there aren't many that publish research on attitude of managers towards adoption of technology.

- The survey was conducted to the hotels guest, but some of the guests didn't take it seriously or didn't have enough time to complete it correctly because of time constraints or other issues.
- Taking the respondents into account, the sample size was determined.
- The study is exclusively conducted within the Delhi NCR.
- Getting approval from hotel authorities to enter hotels takes a lot of time.
- Due to internal problems, several hotels are not allowed to give information.
- Research limited to a specific region, in terms of the instruments and methods used, the sample and processes, and so on, based on the resources of the researchers.
- Study was exclusively conducted in 5 star and 5 star deluxe hotels.
- Further the research could be done on mediating role of perceived service quality.
- Further research could investigate other variables such as pre and post purchase decision.
- Mixed method questionnaire techniques could be adopted for the further study.

5.6 ASSUMPTIONS

There are various assumptions in this study. According to Simon (2013), assumptions are variables that affect a study but that the researcher is unable to prove once the study is over. The initial presumption was that the response gathered from the respondents accurately reflected. It was presumed that the participants fulfil the study's conditions. Secondly, in order to meet the study's aims, it was expected that the measuring scale would be dependable and that the research hypothesis would be formulated suitably. It was believed that the data analysis technologies selected for this study would produce the dependable and easy to interpret results. It was thought that representation of respondents for the complete 5-star and 5-star deluxe

hotels of Delhi NCR and the responses might prove real across different regions of India as well.

5.7 RECOMMENDATIONS AND SUGGESTIONS

This study's results provide a foundation for a number of suggestions meant to encourage the hotel sector to make better use of cutting-edge technological offerings. To improve the uptake and efficiency of cutting-edge technological services in hotels in the Delhi-National Capital Region, it is suggested to use a multi-faceted strategy. The goals of the strategies are to make the industry more prepared for technology advances, increase customer happiness, and streamline operations.

Hotel Managers:

Invest in Digital Infrastructure: A strong digital environment should be a top priority for hotels, and one way to achieve this is by implementing innovative technologies like blockchain for safe payment solutions, consumer interaction tools powered by artificial intelligence, and Internet of Things (IoT) devices for operational automation. By facilitating the smooth incorporation of services, these technologies contribute to an elevated guest experience. Create an all-encompassing plan for the hotel's technology that supports the company's overarching goals. The intended advantages, a schedule for implementation, and the precise technologies to be used should all be detailed in this strategy.

Training and Development for Employees: Skilled personnel can optimise the advantages of these innovations while guaranteeing operational efficiency, which is why it is crucial to establish tailored training programs to foster employee adaptability to advanced technologies in order to overcome technological barriers. Put money into training programs so workers can use and maintain tech services. This will make sure that staff members are familiar with the latest tech and can use it to their advantage to provide better service to customers.

Making Decisions Based on Data: Make use of data analytics to learn about customer habits, business efficiency, and financial indicators. With this information, we can better allocate resources and make educated judgements regarding technological investments. Assess the efficiency of the service by making use of data collected in real-time. The effectiveness and relevance of technology implementations can be guaranteed by continual improvement made possible by this data-driven approach.

Customer-Focused Strategy: When choosing and introducing new technology, put visitors' wants and requirements first. In order to create loyal customers, hotels need to know what their guests anticipate from them so they can provide it. With the use of AI-powered analytics and

AR/VR apps, hotels can stand out from the competition and cultivate long-term relationships with their guests by offering personalised experiences and innovative marketing initiatives.

Partnerships and Collaboration: Work together with suppliers of technology and specialists in the field to keep up with the newest developments in the field. In order to gain access to innovative technologies and exchange best practices, hotels might form partnerships. Gain access to cutting-edge ideas and try out new solutions by forming partnerships with technology companies. By working together, hotels may lessen the chances of adoption hazards while simultaneously keeping up with the latest technological developments.

Privacy and Security: Take strong precautions to avoid cyberattacks and safeguard guest data. One way to reduce risks and make sure data is private is to conduct security audits regularly and teach employees.

Academics & Researchers: Considerations such as ROI, customer loyalty, and competitive advantage are only a few of the long-term effects of technological services on hotel performance that could be the subject of future studies. Best practices and new trends in the use of technology services can be better understood by conducting comparative studies across various areas and hotel chains. Interviews and case studies are examples of qualitative research approaches that can help shed light on the pros and cons of adopting new technologies. To better understand the complicated difficulties surrounding technology adoption, academics from diverse disciplines, including as psychology, information technology, and hospitality management, can collaborate. This type of research is known as interdisciplinary research.

5.8 SUMMARY

The discussion of the outcome based on analysis of the data was done after that it was considered the probable managerial consequences. The potential recommendations were added together with the main effects that the hotel industry needs to take into account. The research study's objectives were conducted and analysed together with the outcomes from the analysis. There was also discussion of the study's potential shortcomings that were revealed in this present investigation.

Reference

Abdallah M. Elshaer & Asmaa M. Marzouk (2022) Memorable tourist experiences: the role of smart tourism technologies and hotel innovations, Tourism Recreation Research, DOI: 10.1080/02508281.2022.2027203.

Aboelmaged, M. G. (2018). Knowledge sharing through enterprise social network (ESN) systems: motivational drivers and their impact on employees' productivity. *Journal of Knowledge Management*, *22*(2), 362-383.

Agegnehu, M., Lemi, K., & Mulatu, F. (2019). Factors influencing the adoption of information communication technology (ICT): In selected, rated, hotels in Addis Ababa, Ethiopia. Journal of process management and new technologies, 7(4).

Aggarwal, V., Gaur, A., & Nayak, N. (2016). A Review Study on the Adoption of ICT in Hotel Industry in Delhi NCR. *Vindhya International Journal of Management & Research (VIJMR)*, *2*(1).

Ahmad, R., & Scott, N. (2019). Technology innovations towards reducing hospitality human resource costs in Langkawi, Malaysia. *Tourism Review, 74(3), 547-562.*

Ahmed, A. S. M. A. U. (2021). *Employee physical appearance and quality service delivery a case of selected four star hotels in Greater Accra Region* (Doctoral dissertation, University of Education Winneba).

Alfandi, A. M. (2020). Manager Attitude Impact on the Performance of Employees "A Case of Jordanian Travel and Tourism Institutions". International Business Research, 13(1), 136-144.

Ali, B. J., Gardi, B., Othman, B. J., Ahmed, S. A., Ismael, N. B., Hamza, P. A., ... & Anwar, G. (2021). Hotel service quality: The impact of service quality on customer satisfaction in hospitality. *International Journal of Engineering, Business and Management*, *5*(3), 14-28.

Allam, S. (2016). The Impact of Artificial Intelligence on Innovation - An Exploratory Analysis. *International Journal of Creative Research Thoughts, 4*(4), 810-814.

Alrawadieh, Z., Alrawadieh, Z., & Cetin, G. (2021). Digital transformation and revenue management: Evidence from the hotel industry. *Tourism Economics*, *27*(2), 328-345.

Angioha, P. U., Enukoha, C. U., Agba, R. U., & Ikhizamah, G. U. (2020). Information technology predictor variables and employee productivity in commercial banks. *JINAV: Journal of Information and Visualization*, *1*(1), 44-52.

Anita, T. L., Subakti, A. G., Zulkarnain, A., & Pitchayadejanant, K. (2022). Technology Acceptance Model for Virtual Reality in Hotel Industry. In *Proceedings of the 5th*

European International Conference on Industrial Engineering and Operations Management Rome, Italy, July 26 (Vol. 28, p. 2022).

Anna, B. Innovative Technologies In The Hospitality Field, Their Influence On The Attractiveness Of The Enterprise For Consumers And The Competitiveness Of The Hotel. Ученые Записки, 186.

Anning-Dorson, T., & Nyamekye, M. B. (2020). Be flexible: turning innovativeness into competitive advantage in hospitality firms. International Journal of Contemporary Hospitality Management.

Ansari, A. I., Singh, A., & Singh, V. (2023). The impact of differential pricing on perceived service quality and guest satisfaction: An empirical study of mid-scale hotels in India.

Anser, M.K., Yousaf, Z., Usman, M., Yousaf, S., 2020. Towards strategic business performance of the hospitality sector: nexus of ICT, e-marketing and organizational readiness. Sustainability 12, 1346.

Arghashi, V., & Yuksel, C. A. (2022). Interactivity, Inspiration, and Perceived Usefulness! How retailers' AR-apps improve consumer engagement through flow. *Journal of Retailing and Consumer Services*, *64*, 102756.

Aslan, A., Altinoz, B., & Özsolak, B. (2021). The nexus between economic growth, tourism development, energy consumption, and CO 2 emissions in Mediterranean countries. *Environmental Science and Pollution Research, 28, 3243-3252.*

Bailey, J., & McCollough, M. (2000). Emotional labor and the difficult customer: Coping strategies of service agents and organizational consequences. *Journal of Professional Services Marketing, 20*(2), 51-72

Beck, P., & Slubowski, A. (2022). Understanding Norwegian service customers motivations and barriers of service robot adoption (Master's thesis, Handelshøyskolen BI).

Behera, D. K., & Karthiayani, V. P. (2022). Do globalization progress and sectoral growth shifts affect income inequality? An exploratory analysis from India. *Regional Science Policy & Practice*, *14*(2), 352-376.

Belanche, D., Casaló, L.V., Flavián, C. and Schepers, J., 2020a, "Service robot implementation: a theoretical framework and research agenda", *The Service Industries Journal*, Vol. 40 No. 3-4, pp.203-225.

Bharwani, S., & Mathews, D. (2021). Post-pandemic pressures to pivot: tech transformations in luxury hotels. *Worldwide Hospitality and Tourism Themes*, *13*(5), 569-583.

Bilgihan, A., Okumus, F., “Khal” Nusair, K., & Joon-Wuk Kwun, D. (2011). Information technology applications and competitive advantage in hotel companies. *Journal of Hospitality and Tourism Technology*, *2*(2), 139-153.

Blichfeldt, H., & Faullant, R. (2021). Performance effects of digital technology adoption and product & service innovation–A process-industry perspective. *Technovation*, *105*, 102275.

Breier, M., Kallmuenzer, A., Clauss, T., Gast, J., Kraus, S., & Tiberius, V. (2021). The role of business model innovation in the hospitality industry during the COVID-19 crisis. *International Journal of Hospitality Management, 92, 102723*

Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees’ perceptions of our future workplace. *Journal of Management & Organization*, *24*(2), 239-257.

Brugere, C., Padmakumar, K. P., Leschen, W., & Tocher, D. R. (2021). What influences the intention to adopt aquaculture innovations? Concepts and empirical assessment of fish farmers’ perceptions and beliefs about aquafeed containing non-conventional ingredients. *Aquaculture Economics & Management*, *25*(3), 339-366.

Buhalis, D., & Leung, R. (2018). Smart hospitality—Interconnectivity and interoperability towards an ecosystem. *International Journal of Hospitality Management*, *71*, 41-50.

Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., & Hofacker, C. (2019). Technological disruptions in services: lessons from tourism and hospitality. Journal of Service Management.

Bylok, F. (2022, September). Role of Managers in Stimulating Innovativeness of Employees in Enterprises. In Proceedings of the 23rd European Conference on Knowledge Management (Vol. 23, No. 1). Reading, Great Britain.

C. L. M. Marinchak, E. Forrest, B. Hoanca, “The impact of artificial intelligence and virtual personal assistants on marketing,” in Encyclopedia of Information Science and Technology, fourth ed., 2018, pp. 5748–5756 (IGI global).

Cao, G., Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2021). Understanding managers’ attitudes and behavioral intentions towards using artificial intelligence for organizational decision-making. *Technovation*, *106*, 102312.

Car, T., & Stıfanıch, L. P. (2020). Mobile technology: a tool to increase hotel sales and revenue. *Economics Business and Organization Research*, 454-465.

Castellacci, F. (2008). Technological paradigms, regimes and trajectories: Manufacturing and service industries in a new taxonomy of sectoral patterns of innovation. Research policy, 37(6-7), 978-994.

Chan, A. P. H., & Tung, V. W. S. (2019). Examining the effects of robotic service on brand experience: the moderating role of hotel segment. Journal of Travel & Tourism Marketing, 36(4), 458-468.

Chan, E. S., Okumus, F., & Chan, W. (2020). What hinders hotels' adoption of environmental technologies: A quantitative study. *International Journal of Hospitality Management*, *84*, 102324.

Chang, C. W., Tseng, T. H., & G. Woodside, A. (2013). Configural algorithms of patient satisfaction, participation in diagnostics, and treatment decisions' influences on hospital loyalty. *Journal of Services Marketing*, *27*(2), 91-103.

Chathoth, P. K. (2007). The impact of information technology on hotel operations, service management and transaction costs: A conceptual framework for full-service hotel firms. *International Journal of Hospitality Management*, *26*(2), 395-408.

Chen, H., Huang, X., & Li, Z. (2020), "A content analysis of Chinese news coverage on COVID-19 and tourism", *Current Issues in Tourism*, 1-8. doi: 10.1080/13683500.2020.1763269.

Chen, I. J., & Popovich, K. (2003). Understanding customer relationship management (CRM): People, process and technology. Business process management journal, 9(5), 672-688.

Chen, I. Y., Szolovits, P., & Ghassemi, M. (2019). Can AI help reduce disparities in general medical and mental health care?. AMA journal of ethics, 21(2), 167-179.

Chen, J.-S., Le, T.-T.-Y., & Florence, D. (2021). Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing. *International Journal of Retail & Distribution Management,49*(11),

Cheriyan, A., Sharma, R. K., Joseph, A., & Kappil, S. R. (2022). Consumer acceptance towards AI-enabled chatbots; case of travel and tourism industries. *Journal of Positive School Psychology*, *6*(3), 3880-3889.

Chevers, D., & Spencer, A. (2017). Customer satisfaction in Jamaican hotels through the use of information and communication technology. Worldwide Hospitality and Tourism Themes, 9(1), 70-85.

Chintala, S. (2021). Explore the impact of emerging technologies such as AI, machine learning, and blockchain on transforming retail marketing strategies. *Webology (ISSN: 1735-188X)*, *18*(1).

Cho, D. W., Lee, Y. H., Ahn, S. H., & Hwang, M. K. (2012). A framework for measuring the performance of service supply chain *management. Computers & Industrial Engineering, 62(3), 801-818.*

Choi, Y., Choi, M., Oh, M. and Kim, S., 2020, "Service robots in hotels: understanding the service quality perceptions of human-robot interaction", *Journal of Hospitality Marketing & Management*, Vol. 29 No. 6, pp.613-635.

Chung, M., Ko, E., Joung, H., & Kim, S. J. (2020). Chatbot E-service and customer satisfaction regarding luxury brands. *Journal of Business Research, 117,* 587-595

Cobos, M. R. A. G. L. Journal of Hospitality and Tourism Technology. Journal of Hospitality and Tourism Technology, 6(3), 242-257.

D. Castillo, A. I. Canhoto, E.Said, "The dark side of AI-powered servicei nteractions: exploring the process of co-destruction from the customer perspective," Serv. Ind. J. vol. 2020, pp. 1–26, 2020.

Dani, R., Rawal, Y. S., Bagchi, P., & Khan, M. (2022). Opportunities and challenges in implementation of artificial intelligence in food & beverage service industry. In AIP Conference Proceedings (Vol. 2481, No. 1, p. 050002). AIP Publishing LLC.

Di Vaio, A., Palladino, R., Hassan, R. and Escobar, O., 2020b, "Artificial intelligence and business models in the sustainable development goals perspective: A systematic literature review", *Journal of Business Research*, Vol. 121, pp.283-314.

Elziny, M. N., & Mohamed, H. E. (2022). The Role of Technological Innovation in Improving the Egyptian Hotel Brand Image. International Journal of Heritage, Tourism and Hospitality, 15(2), 20-39.

Ersoy, a. The relationship between artificial intelligence and robotics (air) and organizational culture in the hospitality industry: a conceptual framework. *Research in humanities and social sciences*, 61.

Ezzaouia, I., & Bulchand-Gidumal, J. (2023). The impact of information technology adoption on hotel performance: Evidence from a developing country. *Journal of Quality Assurance in Hospitality & Tourism*, *24*(5), 688-710.

Gautam, P. (2021). The effects and challenges of COVID-19 in the hospitality and tourism sector in India. *Journal of Tourism and Hospitality Education*, *11*, 43-63.

Gelbman, A. (2021). Tourist experience and innovative hospitality management in different cities. *Sustainability*, *13*(12), 6578.

Georgievski, B. (2023). Willingness to adopt Metaverse in Rotterdam, Netherlands.

Giotis, G., & Papadionysiou, E. (2022). The role of managerial and technological innovations in the tourism industry: a review of the empirical literature. *Sustainability*, *14*(9), 5182.

Goel, P., Kaushik, N., Sivathanu, B., Pillai, R., & Vikas, J. (2022). Consumers' adoption of artificial intelligence and robotics in hospitality and tourism sector: literature review and future research agenda. Tourism Review.

Gonzalez, R., Gasco, J., & Llopis, J. (2019). ICTs in hotel management: a research review. International Journal of Contemporary Hospitality Management, 31(9), 3583-3609.

Gonzalez, R., Gasco, J., & Llopis, J. (2020). Information and communication technologies and human resources in hospitality and tourism. International Journal of Contemporary Hospitality Management, 32(11), 3545-3579.

Gretzel, U., Koo, C., Sigala, M., & Xiang, Z. (2015). Special issue on smart tourism: convergence of information technologies, experiences, and theories. Electronic Markets, 25, 175-177.

Gupta, V. (2019). The influencing role of social media in the consumer's hotel decision-making process. *Worldwide Hospitality and Tourism Themes.*

Gursoy, D. and Chi, C.G., 2020, "Effects of COVID-19 pandemic on hospitality industry: review of the current situations and a research agenda", *Journal of Hospitality Marketing & Management*, Vol. 29 No. 5, pp.527-529.

Guzman, I. and Pathania, A. (2016), "Chatbots in customer service, accenture interactive", availableat:*https://doi.org/10.1007/BF02490459*

Hair, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G. (2014), "Partial least squares structural equation modeling (PLS-SEM): an emerging tool in business research", *European Business Review, Vol. 26 No. 2, pp. 106-121.*

Harif, M. A. A. M., Nawaz, M., & Hameed, W. U. (2022). The role of open innovation, hotel service quality and marketing strategy in hotel business performance. *Heliyon*, *8*(9).

Hecklau, F., Orth, R., Kidschun, F., & Kohl, H. (2017). Human Resources Management: Meta-Study-Analysis of Future Competencies in Industry 4.0. *Proceedings of the International Conference on Intellectual Capital, Knowledge Management & Organizational Learning*, 163-174.

Herath, R. B., Tham, J., Khatibi, A., & Azam, S. F. A. (2023). An investigation into the Relationship between Revenue Management Practices and Financial Performance in Star-Rated Hotels in Sri Lanka. *Journal of Law and Sustainable Development*, *11*(11), e1538-e1538.

Heryandi, "Developing chatbot for academic record monitoring in higher education institution," in IOP Conference Series: Materials Science and Engineering, 2020, vol. 879, no. 1, p. 12049.

Hill, L., & Hill, L. (2020). Adam Smith's International Thought. Adam Smith's Pragmatic Liberalism: The Science of Welfare, 143-186.

Hjalager, A. M. (2010). A review of innovation research in tourism. Tourism management, 31(1), 1-12.

Hjalager, A. M. (2010). A review of innovation research in tourism. *Tourism management*, *31*(1), 1-12.

Ho, Y. H., Alam, S. S., Masukujjaman, M., Lin, C. Y., Susmit, S., & Susmit, S. (2022). Intention to adopt AI-powered online service among tourism and hospitality companies. International Journal of Technology and Human Interaction (IJTHI), 18(1), 1-19.

Hole, Y. (2019). Challenges and solutions to the development of the tourism and hospitality industry in India. *African Journal of Hospitality, Tourism and Leisure, 8(3), 1-11.*

https://www.bu.edu/hospitality/2023/01/26/technology-trends-in-hospitality/

Hua, L.Y., Ramayah, T., Ping, T.A. and Jacky, C.J. (2017), "Social media as a tool to help select tourism destinations: the case of social media as a tool to help select tourism destinations: the case of Malaysia", *Information Systems Management, Vol. 34 No. 3, pp. 265-279.*

Hua, N., Huang, A., Medeiros, M., & DeFranco, A. (2020). The moderating effect of operator type: the impact of information technology (IT) expenditures on hotels' operating performance. *International Journal of Contemporary Hospitality Management*, *32*(8), 2519-2541.

Huang, M.H. and Rust, R.T., 2020, "Engaged to a Robot? The Role of AI in Service", *Journal of ServiceResearch*, doi:10.1177/1094670520902266.

Hur, W. M., & Shin, Y. (2024). Service employees' STARA awareness and proactive service performance. *Journal of Services Marketing*.

Iranmanesh, M., Ghobakhloo, M., Nilashi, M., Tseng, M. L., Yadegaridehkordi, E., & Leung, N. (2022). Applications of disruptive digital technologies in hotel industry: A systematic review. *International Journal of Hospitality Management*, *107*, 103304.

Irwansyah, I., & Triputra, P. (2016). User acceptance of tourism and hospitality mobile applications in Indonesia. The Social Sciences, 11(21), 5145-5150.

Israel, K., Zerres, C., & Tscheulin, D. K. (2019). Presenting hotels in virtual reality: does it influence the booking intention?. Journal of Hospitality and Tourism Technology, 10(3), 443-463.

Isroilova, N. F., Matniyazov, Z. E., & Mansurov, Y. M. (2022). Modern Trends in Interior Design of Hotel Premises. Eurasian Journal of Engineering and Technology, 5, 55-59.

Ivanov, S. H., Webster, C., & Berezina, K. (2017). Adoption of robots and service automation by tourism and hospitality companies. *Revista Turismo & Desenvolvimento*, *27*(28), 1501-1517.

Ivanov, S., & Webster, C. (2019). Conceptual framework of the use of robots, artificial intelligence and service automation in travel, tourism, and hospitality companies. Robots, artificial intelligence, and service automation in travel, tourism and hospitality.

Ivanov, S., Gretzel, U., Berezina, K., Sigala, M., & Webster, C. (2019). Progress on robotics in hospitality and tourism: a review of the literature. Journal of Hospitality and Tourism Technology, 10(4), 489-521.

Ivanov, S., Seyitoğlu, F., & Markova, M. (2020). Hotel managers' perceptions towards the use of robots: a mixed-methods approach. *Information Technology & Tourism, 22, 505-535.*

IvyPanda. (2019, May 25). Technology in Hospitality Industry. https://ivypanda.com/essays/technology-in-hospitality-industry/

J. Wirtz, P. G. Patterson, W. H. Kunz, T. Gruber, V. N. Lu, S. Paluch, A. Martins, "Brave new world: service robots in the frontline," J. Serv. Manag., vol. 29, no. 5, pp. 907–931, 2018.

Jabeen, F., Al Zaidi, S., & Al Dhaheri, M. H. (2022). Automation and artificial intelligence in hospitality and tourism. Tourism Review, 77(4), 1043-1061.

Jackson, L. A. (2009). Biometric technology: The future of identity assurance and authentication in the lodging industry. International Journal of Contemporary Hospitality Management, 21(7), 892-905.

Jansom, A., & Pongsakornrungsilp, S. (2021). How Instagram influencers affect the value perception of Thai millennial followers and purchasing intention of luxury fashion for sustainable marketing. *Sustainability, 13*(15),

Javaid, M., Haleem, A., Singh, R. P., & Suman, R. (2021). Substantial capabilities of robotics in enhancing industry 4.0 implementation. *Cognitive Robotics*, *1*, 58-75.

Jawabreh, O., Jahmani, A., Maaiah, B., & Basel, A. (2022). Evaluation of the contents of the five stars hotel website and customer orientation. *Information Sciences Letters*, *11*(4), 1077-1085.

Jawabreh, O., Shniekat, N., Saleh, M. M. A., & Ali, B. (2022). The strategic deployment of information systems attributes and financial performance in the hospitality industry. *Information Sciences Letters*, *11*(5), 110504.

Jeong, M., Lee, M., & Nagesvaran, B. (2016). Employees' use of mobile devices and their perceived outcomes in the workplace: A case of luxury hotel. *International Journal of Hospitality Management*, *57*, 40-51.

Karim, R. A., Sobhani, F. A., Rabiul, M. K., Lepee, N. J., Kabir, M. R., & Chowdhury, M. A. M. (2022). Linking fintech payment services and customer loyalty intention in the hospitality industry: The mediating role of customer experience and attitude. Sustainability, 14(24), 16481.

Karimipour, H., Dehghantanha, A., Parizi, R. M., Choo, K. K. R., & Leung, H. (2019). A deep and scalable unsupervised machine learning system for cyber-attack detection in large-scale smart grids. Ieee Access, 7, 80778-80788.

Kaushik, A.K., Agrawal, A.K. and Rahman, Z. (2015), "Tourist behaviour towards self-service hotel technology adoption: trust and subjective norm as key antecedents", *Tourism Management Perspectives, Vol. 16, pp. 278-289.*

Kerdpitak, C. (2021). Digital marketing and technology innovation on tourism business performance. *Multicultural Education, 7(6), 198-207.*

Khan, M., & Khan, M. A. (2009). How technological innovations extend services outreach to customers: The changing shape of hospitality services taxonomy. International Journal of Contemporary Hospitality Management, 21(5), 509-522.

Kim, A. J., & Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business Research, 65*(10), 1480-1486

Kim, J. J., & Han, H. (2022). Hotel Service Innovation with Smart Technologies: Exploring Consumers' Readiness and Behaviors. Sustainability, 14(10), 5746.

Kim, M. J., Lee, C. K., & Preis, M. W. (2020). The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. Telematics and Informatics, 49, 101349.

Kim, S. S., Kim, J., Badu-Baiden, F., Giroux, M., & Choi, Y. (2021). Preference for robot service or human service in hotels? Impacts of the COVID-19 pandemic. International Journal of Hospitality Management, 93, 102795.

Ko, C. H., & Yu, C. C. (2015). Exploring Employees' perception Of Biometric Technology Adoption In Hotels. International Journal of Organizational Innovation, 8(2).

Kožárová, M.; Sirotiaková, M. The theoretical-empirical model to support the management of the implementation and sustain- ability of organizational innovations. Int. J. Res. Bus. Manag. Account. 2018, 4, 1–23.

Kruja, A. D., Hysa, X., Duman, T., & Tafaj, A. (2019). Adoption of software as a service (SaaS) in small and medium-sized hotels in Tirana. Enlightening Tourism. A Pathmaking Journal, 9(2), 137-167.

Kumar, A., Syed, A. A., & Singh, A. (2022). Future Aspects of Digital Sustainability in Hotels: A Study on Digital Marketing Challenges with Proposed Solutions (Opportunities) during and Post COVID Era. International Management Review, 18, 79-94.

Kumar, S., Kumar, V., & Attri, K. (2021). Impact of Artificial Intelligence and Service Robots in Tourism and Hospitality Sector: Current Use & Future Trends. *Administrative Development: A Journal of HIPA, Shimla, 8*(SI-1), 59-83.

Kuo, C.M., Chen, L.C. and Tseng, C.Y. 2017, "Investigating an innovative service with hospitality robots", *International Journal of Contemporary Hospitality Management*, Vol. 29 No. 5, pp.1305-1321.

Lam, S.Y., Chiang, J. and Parshuraman, A. (2008), "The effects of the dimensions of technology acceptance: an empirical analysis", *Journal of Interactive Marketing, Vol. 22 No. 4, pp. 19-39*

Laurell, C., Sandström, C., Berthold, A., & Larsson, D. (2019). Exploring barriers to adoption of Virtual Reality through Social Media Analytics and Machine Learning–An assessment of technology, network, price and trialability. Journal of Business Research, 100, 469-474.

Law, R., Leung, D., & Chan, I. C. C. (2020). Progression and development of information and communication technology research in hospitality and tourism: A state-of-the-art review. International Journal of Contemporary Hospitality Management, 32(2), 511-534.

Leal, S. R. S. (2024). *Destination Assessment for Hotel Development: The Standard Case Study* (Doctoral dissertation, Nova School of Business and Economics).

Lee, J., Kim, J., & Choi, J. Y. (2019). The adoption of virtual reality devices: The technology acceptance model integrating enjoyment, social interaction, and strength of the social ties. Telematics and Informatics, 39, 37-48.

Lee, S. A. (2018). M-servicescape: Effects of the hotel mobile app servicescape preferences on customer response. *Journal of Hospitality and Tourism Technology.*

Lee, W. H., Lin, C. W., & Shih, K. H. (2018). A technology acceptance model for the perception of restaurant service robots for trust, interactivity, and output quality. *International Journal of Mobile Communications*, *16*(4), 361-376.

Lehto, X. Y., Park, S., Mohamed, M. E., & Lehto, M. R. (2023). Traveler attitudes toward biometric data-enabled hotel services: CaN risk education play a role?. Cornell Hospitality Quarterly, 64(1), 7494.

Lenberg, P., Wallgren Tengberg, L. G., & Feldt, R. (2017). An initial analysis of software engineers' attitudes towards organizational change. *Empirical Software Engineering*, *22*, 2179-2205.

Lenuwat, P., & Boon-itt, S. (2022). Information technology management and service performance management capabilities: An empirical study of the service supply chain management process. *Journal of Advances in Management Research, 19(1), 55-77.*

Leonard-Barton, D., & Deschamps, I. (1988). Managerial influence in the implementation of new technology. *Management science*, *34*(10), 1252-1265.

Leung, R. (2019). Smart hospitality: Taiwan hotel stakeholder perspectives. *Tourism Review*, *74*(1), 50-62.

Leung, W. K., Cheung, M. L., Chang, M. K., Shi, S., Tse, S. Y., & Yusrini, L. (2022). The role of virtual reality interactivity in building tourists' memorable experiences and post-adoption intentions in the COVID-19 era. Journal of Hospitality and Tourism Technology, 13(3), 481-499.

Leung, X. Y., Lyu, J., & Bai, B. (2020). A fad or the future? Examining the effectiveness of virtual reality advertising in the hotel industry. International Journal of Hospitality Management, 88, 102391.

Leung, X. Y., Xue, L., & Bai, B. (2015). Internet marketing research in hospitality and tourism: a review and journal preferences. International Journal of Contemporary Hospitality Management, 27(7), 1556-1572.

Li, P., Zhou, Y., & Huang, S. (2023). Role of information technology in the development of e-tourism marketing: A contextual suggestion. *Economic Analysis and Policy*, *78*, 307-318.

Li, S. (2020). The impact of service quality, self-service technology, and the corporate image on customer satisfaction and customer revisit intention among luxury hotels in Kuala Lumpur, Malaysia. *International Journal of Services, Economics and Management*, *11*(1), 48-70.

Limarunothai, W., Jansom, A., & Srisangkhajorn, T. (2022). How chatbot e-services motivate communication credibility and lead to customer satisfaction: The perspective of Thai

consumers in the apparel retailing context. LLC "Consulting Publishing Company "Business Perspectives".

Lin, Y., & Su, H. Y. (2003). Strategic analysis of customer relationship management—a field study on hotel enterprises. *Total Quality Management & Business Excellence*, *14*(6), 715-731.

Liu, C., & Hung, K. (2020). A comparative study of self-service technology with service employees: a qualitative analysis of hotels in China. *Information Technology & Tourism, 22(1), 33-52.*

Liu, C., & Yang, J. (2021). How hotels adjust technology-based strategy to respond to COVID-19 and gain competitive productivity (CP): strategic management process and dynamic capabilities. *International Journal of Contemporary Hospitality Management*, *33*(9), 2907-2931.

Lu, L., Lu, A. C. C., Gursoy, D., & Neale, N. R. (2016). Work engagement, job satisfaction, and turnover intentions: A comparison between supervisors and line-level employees. *International Journal of Contemporary Hospitality Management*, *28*(4), 737-761.

Lukanova, G., & Ilieva, G. (2019). Robots, artificial intelligence, and service automation in hotels. In Robots, artificial intelligence, and service automation in travel, tourism and hospitality (pp. 157-183). Emerald Publishing Limited.

Lušňáková, Z., Benda-Prokeinová, R., & Juríčková, Z. (2022). Attitudes and Involvement of Employees in the Process of Implementing Innovations and Changes in Companies. *Behavioral Sciences*, *12*(6), 174.

M. Lombardi, F. Pascale, D. Santaniello, "An application for cultural heritage using a chatbot," in 2nd International Conference on Computer Applications & Information Security (ICCAIS), pp. 1–5, 2019.

Magdalena, L. (2023). Implementation Chatbot for SMEs Using Artificial Intelligence Markup Language to Improve Customer Integration and Business Performance. *Applied Information System and Management (AISM)*, *6*(2), 69-76.

Maingi, K. M., & Obonyo, Â. G. O. (2022). Service delivery digitalization as a tool for COVID-19 recovery in fast-food restaurants in Nairobi, Kenya. Journal of Hospitality and Tourism, 2(2), 15-23.

Mani, Z. and Chouk, I. (2018), "Consumer resistance to innovation in services: challenges and barriers in the internet of things era", *Journal of Product Innovation Management, Vol. 35 No. 5, pp. 780-807.*

Mariani, M., Baggio, R., Fuchs, M., & Höepken, W. (2018). Business Intelligence and Big Data in Hospitality and Tourism: A Systematic Literature Review. *International Journal of Contemporary Hospitality Management, 30*, 12, 3514-3554.

Marques, I. A., Borges, I., Pereira, A. M., & Magalhães, J. (2022). Hotel technology innovations as drivers of safety and hygiene in hotel customers. In *Advances in Tourism, Technology and Systems: Selected Papers from ICOTTS 2021, Volume 2* (pp. 571-583). Singapore: Springer Nature Singapore.

Marr, B. (2022). *Future skills: The 20 skills and competencies everyone needs to succeed in a digital world*. John Wiley & Sons.

Martín-Rios, C., & Ciobanu, T. (2019). Hospitality innovation strategies: An analysis of success factors and challenges. *Tourism Management, 70, 218-229.*

Mathur, S. An analytical study on the instruction programs' on employees using Augmented Reality by Delhi's Five Star Hotels (NCR).

McKinsey & Company. (2018). The future of personalization—and how to get ready for it. https://www.mckinsey.com/industries/travel-logistics-and-transport-infrastructure/our-insights/the-future-of-personalization-and-how-to-get-ready-for-it

Mercan, S., Cain, L., Akkaya, K., Cebe, M., Uluagac, S., Alonso, M., & Cobanoglu, C. (2021). Improving the service industry with hyper-connectivity: IoT in hospitality. *International Journal of Contemporary Hospitality Management*, *33*(1), 243-262.

Miles, I. (2008). Patterns of innovation in service industries. IBM Systems journal, 47(1), 115-128.

Milton, T. (2024). Exploring the Synergy of Artificial Intelligence and Financial Management in the Hotel Industry: A Critical Review of Innovations, Challenges, and Strategic Implications for Enhancing Operational Efficiency and Competitive Advantage. *International Journal for Multidimensional Research Perspectives*, *2*(2), 79-95.

Mingotto, E., Montaguti, F., & Tamma, M. (2021). Challenges in Re-Designing Operations and Jobs to Embody AI and Robotics in Services. Findings from a Case in the Hospitality Industry. *Electronic Markets, 31(3), 493-510.*

Mitrović, A., Knežević, S., & Milašinović, M. (2021). Profitability analysis of hotel companies in the Republic of Serbia. *Менаџмент у хотелијерству и туризму*, *9*(1), 121-134.

Molina-Castillo, F. J., Meroño-Cerdán, A. L., Lopez-Nicolas, C., & Fernandez-Espinar, L. (2023). Innovation and technology in hospitality sector: outcome and performance. *Businesses*, *3*(1), 198-219.

Mukherjee, S., Baral, M. M., & Chittipaka, V. (2022). How to improve organizational performance using big data in the hotels. In *Integrating Blockchain Technology Into the Circular Economy* (pp. 15-43). IGI Global.

Munjal, S., & Singh, A. (2021). Conclusion: Going digital is the only way forward for the Indian tourism and hospitality industry. *Worldwide Hospitality and Tourism Themes*, *13*(2), 291-295.

Nam, K., Dutt, C. S., Chathoth, P., Daghfous, A., & Khan, M. S. (2021). The adoption of artificial intelligence and robotics in the hotel industry: prospects and challenges. *Electronic Markets*, *31*, 553-574.

Napierała, T., Bahar, M., Leśniewska-Napierała, K., & Topsakal, Y. (2020). Technology towards hotel competitiveness: Case of Antalya, Turkey. *European Journal of Tourism, Hospitality and Recreation*, *10*(3), 262-273.

Neo, H. F., & Teo, C. C. (2022). Biometrics in Tourism: Issues and Challenges. Handbook of e-Tourism, 1835-1849.

Neuhofer, B., Buhalis, D., & Ladkin, A. (2013). High tech for high touch experiences: A case study from the hospitality industry. In Information and Communication Technologies in Tourism 2013: Proceedings of the International Conference in Innsbruck, Austria, January 22-25, 2013 (pp. 290-301). Springer Berlin Heidelberg.

Nicolau, J. L., & Santa-María, M. J. (2013). The effect of innovation on hotel market value. International Journal of Hospitality Management, 32, 71-79.

Nocker, M., & Sena, V. (2019). Big Data and Human Resources Management: The Rise of Talent Analytics. *Social Sciences, 8*(10), 273.

Noriega, M. (2020). The application of artificial intelligence in police interrogations: An analysis addressing the proposed effect AI has on racial and gender bias, cooperation, and false confessions. *Futures*, *117*, 102510.

Ottenbacher, M., & Gnoth, J. (2005). How to develop successful hospitality innovation. Cornell hotel and restaurant administration quarterly, 46(2), 205-222.

Oyeniyi, T. (2014). Perception and Attitude of Students toward the Learning and Teaching. of French Language as a General Course in Universities: Afe Babalola University as a Case Study. *AGIDIGBO: ABUAD Journal of the Humanities*, *2*(2), 177-188.

Palacios-Marqués, D., Merigó, J. M., & Soto-Acosta, P. (2015). Online social networks as an enabler of innovation in organizations. Management Decision.

Pande, N., & Bose, D. (2018). Prevalence Of Mobile Learning Among The Hoteliers, And Its Benefits To The Hotels In Delhi Ncr. *PUSA Journal of Hospitality and Applied Sciences*, *4*, 98-107.

Panfiluk, E. (2021). Innovativeness of tourism enterprises: *Example of Poland. Sustainability, 13(3), 1024.*

Park, S., Kwun, D. J., Park, J. Y., & Bufquin, D. (2022). Service quality dimensions in hotel service delivery options: Comparison between human interaction service and self-service technology. *International Journal of Hospitality & Tourism Administration*, *23*(5), 931-958.

Pascucci, F., Savelli, E., & Gistri, G. (2023). How digital technologies reshape marketing: evidence from a qualitative investigation. *Italian Journal of Marketing*, *2023*(1), 27-58.

Phocuswright. (2018). Artificial Intelligence in Travel: Where Are We Today? https://www.phocuswright.com/Travel-Research/Technology-Innovation/Artificial-Intelligence-in-Travel-Where-Are-We-Today

Phuong, T. T. K., & Tran, T. V. (2020). Job satisfaction, employee loyalty and job performance in the hospitality industry: A moderated model. *Asian Economic and Financial Review*, *10*(6), 698.

Pizam, A., Ozturk, A. B., Balderas-Cejudo, A., Buhalis, D., Fuchs, G., Hara, T., ... & Chaulagain, S. (2022). Factors affecting hotel managers' intentions to adopt robotic technologies: A global study. International Journal of Hospitality Management, 102, 103139.

Popesku, J. (2019). Current applications of artificial intelligence in tourism and hospitality. In Sinteza 2019-International Scientific Conference on Information Technology and Data Related Research (pp. 84-90). Singidunum University.

Qian, J., & Law, R. (2021). Examination of website language strategies adopted by five-star hotels in China: A corpus approach. Journal of Theoretical and Applied Electronic Commerce Research, 16(4), 1066-1078.

Rajan, K. and Saffiotti, A. (2017), "Towards a science of integrated AI and robotics", *Artificial Intelligence, Vol. 247, pp. 1-9.*

Rana, V. S., Raina, A., & Bathla, G. (2023). The Effect of Sustainable Practices on Customer Attitude: A Study of Sustainable Hospitality Operations. Emirati Journal of Business, Economics, & Social Studies, 2(1), 4-13.

Ranasinghe, R., Karunarathne, A. C. I. D., & Herath, J. (2021). After corona (COVID-19) impacts on global poverty and recovery of tourism based service economies: An appraisal. *International Journal of Tourism and Hospitality*, *1*(1), 52-64.

Ravishankar, B., & Christopher, P. B. (2020). Impact of innovative services on customer satisfaction and enhancing tourism: Airline and hotel services from a tourist perspective. *Journal of Critical Reviews*, *7*(11), 705-711.

Rivera, M., Gregory, A., & Cobos, L. (2015). Mobile application for the timeshare industry: The influence of technology experience, usefulness, and attitude on behavioral intentions. Journal of Hospitality and Tourism Technology, 6(3), 242-257.

Roy, B. K., & Pagaldiviti, S. R. (2023). Advancements in arena technology: Enhancing customer experience and employee adaptation in the tourism and hospitality industry. *Smart Tourism*, *4*(1), 2330.

Ruel, H., & Njoku, E. (2021). AI Redefining the Hospitality Industry. *Journal of Tourism Futures, 7,* 1, 53-66.

Saengavut, V., & Jirasatthumb, N. (2021). Smallholder decision-making process in technology adoption intention: implications for Dipterocarpus alatus in Northeastern Thailand. *Heliyon*, *7*(4).

Saengavut, V., & Jirasatthumb, N. (2021). Smallholder decision-making process in technology adoption intention: implications for Dipterocarpus alatus in Northeastern Thailand. *Heliyon*, *7*(4).

Sethi, K., Sharma, M., & Gusain, A. (2023, June). The Acceptance of Machine module in the Hospitality Industry with Prospects and Challenges: A Review. In *2023 2nd International Conference on Computational Modelling, Simulation and Optimization (ICCMSO)* (pp. 283-288). IEEE.

Shahid, S., & Paul, J. (2022). Examining guests' experience in luxury hotels: evidence from an emerging market. *Journal of Marketing Management*, *38*(13-14), 1278-1306.

Shamim, S., Cang, S., Yu, H., & Li, Y. (2017). Examining the feasibilities of Industry 4.0 for the hospitality sector with the lens of management practice. *Energies*, *10*(4), 499.

Sharipov, K., Abdurashidova, N., Valiyeva, A., Tuychieva, V., Kholmatova, M., & Minarova, M. (2022, December). A systematic mapping study of using the cutting-edge technologies in marketing: the state of the art of four key new-age technologies. In *International Conference on Next Generation Wired/Wireless Networking* (pp. 381-389). Cham: Springer Nature Switzerland.

Sharma, A., Shin, H., Santa-María, M. J., & Nicolau, J. L. (2021), "HOTELS'COVID-19 innovation and performance", *Annals of Tourism Research*, Vol. 88, p.103180.

Sharma, D. (2016). Enhancing customer experience using technological innovations: A study of the Indian hotel industry. *Worldwide Hospitality and Tourism Themes*, *8*(4), 469-480.

Sharma, M., & Singh, A. (2024). Embracing Technological Disruption: Exploring the Adoption of AI-Driven Solutions in Tourism and Hospitality. In *Impact of AI and Tech-Driven Solutions in Hospitality and Tourism* (pp. 123-138). IGI Global.

Sharma, M., & Singh, A. (2024). Enhancing Competitive Advantages Through Virtual Reality Technology in the Hotels of India. In *Utilizing Smart Technology and AI in Hybrid Tourism and Hospitality* (pp. 243-256). IGI Global.

Sharma, M., Bathla, G., Kaushik, A., & Rana, S. (2023, June). A Study on Impact of Adaptation of AI-Artificial intelligence services on Business Performance of Hotels. In *2023 2nd International Conference on Computational Modelling, Simulation and Optimization (ICCMSO)* (pp. 28-32). IEEE.

Sharma, M., Singh, A., & Rana, S. (2024). Empowering Hospitality Brands AI Strategies for Enhanced Customer Experiences in Emerging Markets. In *Integrating AI-Driven Technologies Into Service Marketing* (pp. 173-190). IGI Global.

Sheehan, B.T. (2018), Customer Service Chatbots: Anthropomorphism, Adoption and Word of Mouth, *Queensland University of Technology, available at: http://arxiv.org/abs/1704.04579*.

Shin, H. H., & Jeong, M. (2022). Redefining luxury service with technology implementation: the impact of technology on guest satisfaction and loyalty in a luxury hotel. *International Journal of Contemporary Hospitality Management*, *34*(4), 1491-1514.

Shin, H., Perdue, R. R., & Kang, J. (2019). Front desk technology innovation in hotels: A managerialperspective. *Tourism Management, 74, 310-318.*

Singh, R., Charan, P., & Chattopadhyay, M. (2022). Evaluating the hotel industry performance using efficiency and effectiveness measures. *International Journal of Hospitality & Tourism Administration*, *23*(2), 408-431.

Singh, V., Sharma, S., & Kapoor, B. (2023). Smart Technology and its Influencing Factors in Room Division Department of Selected Five Star Hotels of National Capital Region (NCR), India. *International Journal of Hospitality & Tourism Systems*, *16*(3).

Sintala, S. K. (2019). *Information And Communication Technology in Hotel Industry* (Doctoral dissertation, Kent State University).

Snead, J., & Seibler, J. M. (2017). Redefining “aircraft,” defining “drone”: a job for the 115th congress”. The Heritage Foundation, 197, 1-8.

Song, B., & Han, H. (2023). Does eco-friendly tourism necessary for entrepreneurship? The role of tourism and innovation in sustainable development. *Environmental Science & Pollution Research*, *30*(35).

Srivastava, S. S. D. S. (2024). Understanding Guest Satisfaction With Technological Amenities In Five-Star Hotels: A Qualitative Analysis. *Journal Of Services Research*, *24*(1).

Stieglitz, S., & Brockmann, T. (2012). Increasing organizational performance by transforming into a mobile enterprise. *MIS quarterly executive*, *11*(4).

Strasser, A., & Westner, M. (2015). Information systems offshoring: results of a systematic literature review. Journal of Information Technology Management, 26(2).

Subawa, N. S., Widhiasthini, N. W., Astawa, I. P., Dwiatmadja, C., & Permatasari, N. P. I. (2021). The practices of virtual reality marketing in the tourism sector, a case study of Bali, Indonesia. *Current Issues in Tourism, 24(23), 3284-3295.*

Sun, S., Lee, P. C., Law, R., & Zhong, L. (2020). The impact of cultural values on the acceptance of hotel technology adoption from the perspective of hotel employees. *Journal of Hospitality and Tourism Management*, *44*, 61-69.

Tavitiyaman, P., So, C. Y. A., Chan, O. L. K., & Wong, C. K. C. (2022). How Task Technology Fits with Employee Engagement, Organizational Support, and Business Outcomes: Hotel Executives’ Perspective. Journal of China Tourism Research, 18(6), 1212-1238.

Thakran, K., & Verma, R. (2013). The emergence of hybrid online distribution channels in travel, tourism and hospitality. *Cornell Hospitality Quarterly, 54(3), 240-247.*

Thelen, A. E. (2022). The Challenges and Benefits of Implementing Virtual Reality and Augmented Reality in the Hotel Industry.

Tiwari, A., Singh, M., & Dahiya, A. (2023). The impact of outsourcing of hotel housekeeping services on hotel performance: A study on 5-star hotels of Delhi NCR. *International Journal of Professional Business Review*, *8*(1), e0905-e0905.

Tosun, P., Sezgin, S., & Uray, N. (2022). Consumer complaining behavior in hospitality management. Journal of Hospitality Marketing & Management, 31(2), 247-264.

Tran, A. D., Pallant, J. I., & Johnson, L. W. (2021). Exploring the impact of chatbots on consumer sentiment and expectations in retail. *Journal of Retailing and Consumer Services, 63,* 102718.https://doi.org/10.1016/j.jretconser.2021.102718

Tripathi, P. M., Srivastava, S., Singh, L. B., Kapoor, V., & Solanki, U. (2021). A JD-R perspective for enhancing engagement through empowerment: A study on Indian hotel industry. *Journal of Hospitality and Tourism Management*, *46*, 12-25.

Tussyadiah, I. P., Wang, D., Jung, T. H., & Tom Dieck, M. C. (2018). Virtual reality, presence, and attitude change: *Empirical evidence from tourism. Tourism management, 66, 140-154.*

UNWTO. (2020). International tourism growth continues to outpace the global economy. Retrieved June 5, 2020, from *https://www.unwto.org/ international-tourism-growth-continues-to-outpace-the-economy*

Utami, H. N. (2020). Entrepreneurial competencies development model on small medium tourism enterprises (SMTEs). Profit: Jurnal Adminsitrasi Bisnis, 14(2), 32-38.

Vagnani, G., & Volpe, L. (2017). Innovation attributes and managers' decisions about the adoption of innovations in organizations: A meta-analytical review. *International Journal of Innovation Studies*, *1*(2), 107-133.

Van Doorn, J., Mende, M., Noble, S.M., Hulland, J., Ostrom, A.L., Grewal, D. and Petersen, J.A. (2017), "Domo arigato Mr Roboto: emergence of automated social presence in organizational frontlines and customers' service experiences", *Journal of Service Research, Vol. 20 No. 1, pp. 43-58.*

Verganti, R., Vendraminelli, L., & Iansiti, M. (2020). Innovation and design in the age of artificial intelligence. Journal of product innovation management, 37(3), 212-227.

Verma, V., & Thakur, S. (2022). The rise of the era of technological amenities and their adoption in the hotel industry. *World Review of Science, Technology and Sustainable Development*, *18*(3-4), 379-397.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The journal of strategic information systems, 28(2), 118-144. ISSN: 0963-8687*

Vishwakarma, P., Mukherjee, S., & Datta, B. (2020). Travelers' intention to adopt virtual reality: A consumer value perspective. *Journal of Destination Marketing & Management*, *17*, 100456.

Wang, L. H., Ho, J. L., Yeh, S. S., & Huan, T. C. T. (2022). Is robot hotel a future trend? Exploring the incentives, barriers and customers' purchase intention for robot hotel stays. *Tourism Management Perspectives*, *43*, 100984.

Wang, Y., & Qualls, W. (2007). Towards a theoretical model of technology adoption in hospitality organizations. *International Journal of Hospitality Management*, *26*(3), 560-573.

Wei, W. (2019). Research progress on virtual reality (VR) and augmented reality (AR) in tourism and hospitality: A critical review of publications from 2000 to 2018. Journal of Hospitality and Tourism Technology.

Westcott, M., Bird, G., et al., (2014). Introduction to Tourism and Hospitality in BC. BCcampus. *https://openlibrary-repo.ecampusontario.ca/jspui/handle/123456789/286*

Wijaya, I. G. N. S., Pratami, N. W. C. A., Yudiastra, P. P., & Arista, M. Y. (2019, August). The Impact between the Use of Information Technology, User Ability on User Motivation and Employee Performance in the Koperasi Kuta Mimba. In *2019 1st International Conference on Cybernetics and Intelligent System (ICORIS)* (Vol. 1, pp. 23-28). IEEE.

X. Luo, S. Tong, Z. Fang, Z. Qu, "Frontiers: machines vs. humans: the impact of artificial intelligence chatbot disclosure on customer purchases," Market. Sci., vol. 38, no. 6, pp. 937–947, 2019.

Xu, Y., Jeong, E., Baiomy, A. E., & Shao, X. (2020). Investigating onsite restaurant interactive self-service technology (ORISST) use: Customer expectations and intentions. *International Journal of Contemporary Hospitality Management*, *32*(10), 3335-3360.

Xu, Y., Shi, Y., & Qin, T. (2023). Challenges in smart tourism: a media content analysis of digital barriers for senior tourists in China. Information Technology & Tourism, 25(4), 665-682.

Xu, Y., Shieh, C.-H., van Esch, P., & Ling, I.-L. (2020). AI customer service: Task complexity, problem-solving ability, and usage intention. *Australasian Marketing Journal, 28*(4), 189-199

Yang, H., Song, H., Cheung, C., & Guan, J. (2021). How to enhance hotel guests' acceptance and experience of smart hotel technology: An examination of visiting intentions. International journal of hospitality management, 97, 103000.

Zarezadeh, Z. Z., Rastegar, R., & Xiang, Z. (2022). Big data analytics and hotel guest experience: a critical analysis of the literature. International Journal of Contemporary Hospitality Management.

Ziyae, B., Sadeghi, H., & Golmohammadi, M. (2022). Service innovation in the hotel industry: the dynamic capabilities view. *Journal of Enterprising Communities: People and Places in the Global Economy*, *16*(4), 582-602.

Appendix-1

RESEARCH QUESTIONNAIRE

Dear Respondents,

This questionnaire has been developed by a Ph.D. Scholar to facilitate research for a thesis on the "**Impact of Innovative Hi-Tech Services on Hotel Performance in Delhi – NCR**" This questionnaire aims to collect primary data essential for this research. Your accurate and sincere responses are highly valued, you are respectfully urged to respond openly and with full accountability. Your candid feedback is a crucial contribution to my thesis. Your privacy in responding to this questionnaire will be maintained confidentially, and the information will solely be utilized for research reasons.

Milan Sharma (Research Scholar)
Hotel Management
Lovely Professional University, Punjab

Questionnaire

Section1

Demographic Profile

1. Hotel name: _____
2. Gender: 1. Male 2. Female
3. Age:
    1. 20-25
    2. 26-30
    3. 30-35
    4. Above 35
4. Education Level:
    1. Diploma
    2. Graduate
    3. Post Graduate
    4. PhD
5. Please specify your designation

General Manager Manager Assistant Manager Supervisor

6. Work Experience in Hotel Industry

0-5 years 6-10 years 11-15 years 16-20 years More than 20 years

7. Please specify in which department you work.

Front Office Housekeeping Food & Beverage Service Food Production Others

Section 2 : latest technology adopted in Hotel

2.1: List of **Innovative high-tech services** that are being widely used at various hotels. Please identify each item currently available in your hotel. (Please Tick Mark)

Rating Scale			
Yes		**No**	
1		**2**	
Sr.No.	**List of High-tech services used in Hotel**	**Yes**	**No**
1	Wifi area/ High-speed internet access		
2	Online booking and Payment		
3	Self-Check In / Check Out kiosks		
4	Express Check In / Check Out		
5	Online Concierge Service		
6	Hotel Mobile apps		
7	Live Streaming		
8	Automatic Sanitizer dispenser		
9	Thermal Scanner		
10	AI-powered chatbots		
11	Intelligent virtual assistants		
12	AI-driven recommendation systems		
13	3D Television		
14	Smart room controls and automation systems		
15	Automated inventory management systems		
16	Facial recognition systems		
17	Biometric access control		
18	contactless payments and access.		
19	Voice recognition systems		
20	Virtual reality tours		
21	VR-based training programs		

22	Virtual reality concierge		
23	Digital Menu		
24	Digital payments		
25	Self -Order Kiosks		
26	Kitchen Display screens		
27	Video-conferencing Capabilities		
28	Video Surveillance		
29	Smart Station		
30	Smart Toilet		

Section 3 : It is about the employee's attitude towards the use of innovative high tech services in general as well as current work process in hotels.

Rating Scale				
SA	**A**	**N**	**D**	**SD**
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
5	**4**	**3**	**2**	**1**

Item code	**Variable**	**Attitude towards adoption of Innovative Hi-Tech Service - Please rate your level of agreement with the statement**	**SA**	**A**	**N**	**D**	**SD**
PEOU1	Perceived Ease of Use	I find the new high-tech services easy to use.					
PEOU2		I would find the high-tech services is flexible to interact with.					
PEOU3		I will find it easier to use high-tech services to undertake different operations.					
E1	Experience	I have prior experience with similar high-tech services.					
E2		My previous experiences with technology have been positive.					

E3		I had previously used the high-tech services for various professional or personal activities					
PE1	Performance Expectancy	I believe that adopting high-tech services will improve my job performance.					
PE2		These technologies will help me achieve my work goals more effectively.					
PE3		I find Technologies useful in my decision- making.					
A1	Attitude	I have a positive attitude towards adopting innovative high-tech services.					
A2		Using high-tech services is a good idea.					
A3		I intend to apply high-tech services in operations in the future.					
I1	Intention	I intend to adopt high-tech services in my department.					
I2		I plan to recommend the use of these technologies to my colleagues.					
I3		I am willing to invest time and resources into learning about these innovations.					
C1	Exogenous Factors (Cost)	The process of adopting high-tech services are costly.					
C2		I believe that the long-term benefits of these technologies outweigh their initial costs.					
C3		Financial constraints would not deter me from adopting these innovations.					
R1	Exogenous Factors (Risk)	My fear of exposure to high-tech services is high.					

R2		The potential benefits of these technologies outweigh the risks involved.					
R3		I am comfortable with the uncertainties related to implementing new technologies.					

Section 4: Impact of high tech services on hotel performance with respect to the variable consider in study.

Rating Scale				
SA	**A**	**N**	**D**	**SD**
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
5	**4**	**3**	**2**	**1**

Item code	Variable	**Impact of high tech services on hotel performance - Please rate Please rate the extent to which you believe**	**SA**	**A**	**N**	**D**	**SD**
AIHTS1	AIHTS	The hotel has adopted many innovative technologies.					
AIHTS2		The hotel uses the latest technology in hospitality.					
AIHTS3		The hotel staff is trained and adept with various tech tools.					
EP1	Employee Productivity (EP)- Employee Performance	The hotel staff efficiently completes their assigned tasks.					
EP2		Employees consistently meet or exceed service standards.					
EP3		Our hotel has a good employee performance					
SQ1	Service Quality	The quality of service provided by employees is high.					

SQ2		Staff members are attentive to guests' needs.					
SQ3		Employees demonstrate professionalism in their interactions with guests.					
CR1	Financial Performance (FP) Cost Reduction	Innovative technologies have helped reduce operational costs at the hotel.					
CR2		Automation has decreased labor costs without compromising service quality.					
CR3		The hotel effectively manages resources to minimize expenses.					
SR1	Sales Revenue	The introduction of hi-tech services has increased overall sales revenue.					
SR2		The average revenue per guest has improved since implementing new technologies.					
SR3		The hotel attracts more customers due to enhanced service offerings.					
P1	Profitability	The hotel's profitability has increased as a result of adopting innovative services.					
P2		Investments in technology have yielded a positive return on investment.					
P3		The financial performance of the hotel has improved in the last year.					
GS-SQ1	Guest Satisfaction (GS) -Service Standard	Customer is satisfied with the quality of service I receive at this hotel.					

GS-SQ2		Staff members respond promptly to guests requests and inquiries.					
GS-SQ3		The service provided meets guests expectations.					
GE1	Guest Experience	Guest overall experience at the hotel has been positive.					
GE2		The booking process was smooth and user-friendly.					
GE3		Guest enjoyed my stay and felt valued as a guest.					
RM1	Return Motivation	Guest have chosen to return to this hotel based on their previous experience.					
RM2		Guest always recommend this hotel to friends and family.					
RM3		Guests participate in a loyalty program offered by this hotel.					

Appendix-2

List of Publications

1. Paper title “Tapping the Potential of Innovative Hi-Tech Services on Hotel Performance using PLS-SEM Approach” published in Evergreen: Joint Journal of Novel Carbon Resource Sciences and Green Asia Strategy in September 2025. (Scopus Indexed).
2. Paper title “Embracing Technological Innovation: A Review of Hi-Tech Services in Hospitality Industry” published in Evergreen: Joint Journal of Novel Carbon Resource Sciences and Green Asia Strategy in December 2024. (Scopus Indexed).
3. Book Chapter title “Embracing technological disruption: Exploring the adoption of AI-driven solutions in tourism and hospitality” published in IGI Global Book Impact of AI and Tech-Driven Solutions in Hospitality and Tourism. (Scopus Indexed).
4. Book Chapter title “Enhancing competitive advantages through virtual reality technology in the hotels of India” published in IGI Global Book Utilizing Smart Technology and AI in Hybrid Tourism and Hospitality. (Scopus Indexed).
5. Sharma, M., Singh, A., & Rana, S. (2024). Empowering Hospitality Brands AI Strategies for Enhanced Customer Experiences in Emerging Markets. In *Integrating AI-Driven Technologies Into Service Marketing* (pp. 173-190). IGI Global.
6. Sharma, M., & Singh, A. (2025). Responsible AI Implementation in the Hospitality Sector: Ethical Challenges and Solutions for VR and AR Applications. In *Responsible Implementations of Generative AI for Multidisciplinary Use* (pp. 367-382). IGI Global.

Appendix 3

List of Conferences

1. Paper title "Impact of attributes of hi-tech services on competitive advantage for a hotel in "Sustainable Development goals and Hospitality (SDGH 2024)" organized by School of Hotel Management and Tourism, Lovely Professional University, Punjab on 14th November, 2024.
2. Paper title "A Study On Technological Innovation Adopted In Hospitality And Tourism Industry" presented in "Sustainable Experimentation and Modeling in Civil Engineering (SEMCE-2023)" organized by School of Civil Engineering, Lovely Professional University, Punjab, on 10-11th August, 2023.
3. Paper title "The Resilient Revival: Contribution of Innovative Tech Services on Growth of Hospitality Industry" presented in "3rd CT International Hospitality & Tourism Conference)" organized by Department of Hotel Management, CT University, Punjab, on 16/02/2024.

Appendix 4

List of Workshops

1. Participated the workshop on "Qualitative, Quantitative and Mixed Research" organized by Research Graduate, 6th May 2023.
2. Participated the workshop on "Research Paper Writing" organized by COMMCAD, 10-11th June 2023.