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Tapping the Potential of Innovative Hi-Tech Services on Hotel Performance using PLS-SEM Approach

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Abstract: In a country's development hospitality industry plays a significant role in enhancing economic and cultural growth, while the adoption of technology contributes to hotel success with achieving maximum benefits. The research aims to examine the influence of cutting-edge technological services on hotel performance in the Delhi NCR region of India. The suggested research model comprises constructs such as adoption of IHTS and dimensions of hotel performance such as employee performance, guest satisfaction and financial outcome. The proposed research model, which includes constructs such as the adoption of IHTS and dimensions of hotel performance (employee performance, guest satisfaction, and financial outcome), was rigorously evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results demonstrate that the primary influence of IHTS adoption on overall hotel performance is significantly observed through its impact on staff performance, rather than a direct effect on financial performance. The findings indicate a substantial correlation between employee performance and financial performance, as well as between financial performance and guest satisfaction in hotels. The ramifications of these results for researchers and hoteliers are examined.

Keywords: Adoption; Hotel Industry; Hotel Performance; Innovation; Innovative Hi-tech Service

1. Introduction

Technological innovation denotes a synthesis of advancements related to technological progress, aimed at enhancing existing products or services incrementally or generating entirely new ones radically. Technological developments are significantly impacting the hotel business. Innovations such as kiosk check-in systems, mobile check-in systems, robotic cleaning systems, ultraviolet (UV) light cleaning systems, robotics, artificial intelligence, and human-robot interactions have become more prevalent in the hotel business. As per the India Brand Equity Foundation (IBEF), international tourist arrivals in 2024 are anticipated to reach 30.5 million by 2028. The travel market in India is forecast to grow from an estimated US\$ 75 billion in FY20 to US\$ 125 billion by FY27. Travel and tourism constitute two of the largest sectors in India, contributing around US\$ 199.6 billion to the nation's GDP. The WTTC projects that, over the next decade, India's Travel and Tourism GDP will expand at an average annual rate of 7.1%. The cumulative foreign direct investment equity inflow in the Hotel and Tourism sector

amounts to US\$ 17.2 billion from April 2000 to March 2024. This represents 2.54% of the overall FDI inflow received across sectors. In 2023, the number of FTAs reached 9.24 million (provisional), reflecting an increase of 43.5% compared to the same period in the previous year, as illustrated in Figure 1. The hotel business significantly contributes to India's overall economy. International brands, like Radisson Hotels India, the Park Group, ITC, and the Taj Group, significantly contribute to attracting foreign investment. The hospitality sector ranks among the top ten industries in India for attracting foreign direct investment (FDI)^{1,2}.

Rapidly, all Hospitality stakeholders became aware of the need for Innovative hi-tech services both for hotel service providers and consumers³. The hotel industry is one of the fastest growing in the world, thanks to its constant diversification and development. The use of technology in hotels is changing the way guests engage with and see their accommodation services, according to research which also argue that this trend is significantly impacting traditional hospitality practices⁴. An increasingly important factor in



Fig. 1: Foreign Tourist arrivals in India during 2023²⁾

both operational efficiency and the quality of the visitor experience is technology. Due to technology adoption increases economic efficiency⁵⁾. Prior research has been dedicated to Innovation and technology adoption but little has been done on the impact on Performance of Hotel. Innovation is very crucial to be more competitive in market. Innovation has a good effect on the economy, but how it affects the performance of hospitality organizations is unclear, and there have been few studies that attempt to explain innovation behavior in this industry⁶⁾. Organizational success is achieved when product quality is enhanced, efficiency is increased, expenses are reduced, demands of consumers are met, and sales and profits are increased. Previous literature on innovation is lacking in depth since the topic of innovation performance analysis has received insufficient attention, with a focus on the financial and employee outcomes of this industry^{3;4)}. India likewise suffers from an absence of in-depth analysis.

The broad use of technology in the hotel industry is not without its problems, though, so let's not get ahead of ourselves. Impacts on privacy, data security, dehumanizing relationships, and the human factor are major worries.

Finally, this research aims to fill the gap between technological advancements and hotel performance by providing practical recommendations for industry practitioners and managers. The literature review and analysis of the hospitality sector revealed a significant gap when it came to how innovation and technology are integrated into the sector in Delhi-National Capital Region (NCR). Comprehending the effects of technology on the customer service they receive. Results from this study will help hotels adapt to the ever-changing digital world and add to the growing body of knowledge on hospitality management. This research endeavors to assist the hospitality sector in providing remarkable and individualised experiences in the digital era by analyzing the pros and cons of integrating technology.

1.1. Objective of the study

This study's overarching goal is to better understand how five-star and five-star deluxe hotels in the Delhi National Capital Region (NCR) of India rely on innovative, high-tech services to run their businesses. Performance is evaluated by several dimensions affected by the introduction of technology⁷⁾. The level of happiness a guest

has throughout their stay is directly related to their impressions of the hotel's service and, by extension, their likelihood to return⁸⁾.

The following are the study aims within this framework: To assess the impact of innovative hi-tech services on hotel performance.

2. Literature Review

A Hotel is the one of the oldest establishment 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 A hotel is a type of business that primarily offers lodging, meals, and other services to people. Guests from all over the world reserve rooms at the hotel and try out its amenities, although many still like staying at well-known hotel chains. With rising in guest expectations, the hospitality sector has a higher service quality than any other⁹⁾. Dimensions that have been brought by researchers are identified which affects the performance of an organisation and innovation is one of these factors. In order to maintain a high level of business efficiency, hotel executives are always looking for new ways to improve. In the hotel industry, innovation is a key factor that drives the organisational performance¹⁰⁾. Recently various studies have investigated the technology adopted in hotels and their impacts. When it comes to the hospitality sector, service innovation is paramount. For example, technological advancements have altered a few of the many prevalent hotel innovations, which include those pertaining to facilities and promotion. Revenue and company performance are impacted by innovation initiatives and their results. On another hand, other research has cast doubt on the idea that innovation initiatives really boost productivity. There are contradiction in some studies that shows innovation efforts do not affect firm performance¹¹⁾.

Various constructs influencing Hotel performance with respect to adoption of technology in the hospitality sector have been examined in the most current research. In addition, Table 1 provides a summary of these creations.

Table 1: Constructs identified for research

Authors and date	Brief overview	Constructs
Alrawadieh, Z., Alrawadieh, Z., & Cetin, G. (2021), Munjal, S., & Singh, A. (2021), Mukherjee, S. et al. (2022), Milton, T. (2024)	Delves into the impact of digital revolution on managing hotel economic outputs performance.	AIHTS, FP
Buhalis, D., & Leung, R. (2018), Molina-Castillo, F. J. et al. (2023)	Explores the role of information technology applications in	AIHTS, FP, CS

	providing lodging businesses with an edge over their competitors.	
Aboelmaged, M. G. (2018), Lu, L. et al. (2016), Jeong, M. et al. (2016)	Determines the factors that encourage employees to share knowledge through company social media websites and how this affects efficiency.	AIHTS, Employee performance
Cheriyian, A. et al. (2022), Buhalis, D., & Leung, R. (2018), Iranmanesh, M. et al. (2022), Kaushik, A. K. et al. (2015), Marques, I. A. et al. (2022)	Examines how well chatbots powered by artificial intelligence are received by customers in the hospitality and tourism sectors.	AIHTS, CS

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

2.1. Hypothesis Development

2.1.1. Employee Performance

Adoption of new technologies is thought by many scholars to boost productivity in the workplace. IT significantly affects output from workers. In terms of time effectiveness, digital technology can substantially boost worker productivity¹³. It has a significant impact on the workload on staff and helps to decrease dishonesty and mistakes. Some researchers in this investigation failed to find evidence that IT use improved productivity in the workplace.

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 quality¹³, technology in hospitality act as a catalyst to increase operation efficiency and effectiveness¹⁴. This is supported by various literature which advocate by previous literature that hotel technologies have an impact on operational procedures, production, situations, and ecosystems¹⁵⁻¹⁷. This leads us to offer a possible hypothesis:

First Hypothesis: There is significant impact of IHTS adoption on employee performance

To put the first hypothesis to the assessment, we will look at two constructs that have been utilized for assessing employee performance within the previous review: improved service quality and increased employee efficiency. What follows is a description of these variables.

2.1.1.1. Staff productivity increased

The efficiency of employees is positively affected by the deployment of technology, according to numerous studies. Adopting new technology systems and process helps in taking complicating decisions, increased productivity and enhance employee efficiency¹⁸. Technology based utility services have collected the necessary information for employees to do their jobs, which ensure their work will be smooth, flowless and effective¹⁹. A surveyed with managers results in 60% believed that technology integration increase employee effectiveness, responses and retention²⁰.

Employees working in hotel feel powered with using high tech services such as information technology and consider it as factor which increase their job performance²¹. The productivity of employees is positively impacted using modern technology for the dissemination of pertinent both within and outside understanding²². Researches shows that organisation which adopted management strategies helps in foster an organization's culture of learning and innovation and boost the adoption of new technologies²³. This is how the efficiency and efficacy of information systems are assisting the hotel industry's workforce in expanding their knowledge, which in turn boosts productivity, creativity, and innovation.

2.1.1.2. Enhanced quality of services

Increased evolution of technology in global hospitality market, where different hotels in various parts of countries claim them as smart hotel, other establishment need to emphasis on adopting such innovative high-tech services which impact on customers' service quality (SQ) to meet their expectations. there is significant impact which results in satisfaction and customer loyalty as a result of the service quality⁹, Hotels have digitized their operations both inside and outside the hotel to achieve service quality and match consumer expectations, according to literature research²⁴⁻²⁶. By integrating various technologies like artificial intelligence, virtual reality, information technology (IT), PMS, kiosks for self-service, service assistants, and customer relationship management (CRM) systems, among others, businesses can enhance the level of service their personnel give while decreasing the likelihood of human errors. Workers at restaurants and front desks, for instance, can improve efficiency and customer satisfaction with the help of new technologies²⁷. Moreover, the adoption of innovative systems streamlines operations and enhances the caliber of service provided to clients, as it provide reliable information to employees about the customer needs and expectations. Service quality is one of major factor that influence the the visitor's impression and their desire to return⁹. Perceived service quality (PSQ) has defined the capability to meet a guest's requirements and expectations²⁸. Public Satisfaction Question (PSQ) is a metric used to determine how well

hotel services meet customer needs.

2.1.2. Financial performance

A highly common metric for evaluating efficiency 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^{29,30}.

In hospitality, literature advocate that technology adoption investment plays the significant role in financial performance³¹ and optimize revenue performance which leads to long-term profitability³². 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 hotel³³. In Indian hotel industry technology efficiency can influence the organizational performance of a hotel if it combined with financial dimensions³⁴. The findings also supported by a study which share the advantages of adoption of technology that leads to increase in productivity, financial performance and guest validate the beneficial impact technological advances have on the efficiency of hotel operations³⁵.

The technology helps in improving performance, technology adoption increase firm efficiency in variety of financial dimension such as reduced cost, increase revenue and profitability. The following theory is advanced within that framework³⁶. Second, we hypothesize that hotels' bottom lines will improve after they deploy IHHS.

To evaluate **Hypothesis 2**, we will use three financial performance metrics: increase in sales revenue, decrease in costs, and profitability. In what follows, we will elucidate these variables.

2.1.2.1. Enhanced sales revenue

Many researches support that technology helps in driving revenue growth in hotel industry²⁹. Adopting new technologies has altered the hotel industry's terrain, and the sole means to progress in India's tourist and hospitality sector is to become digital³⁷. More specifically, Technology like self-service kiosk, self-service technology, ICT adoption, social media channels greatly impact the customer-oriented processes which impact the market size leads to better sales growth³⁸. Revenue of sales for a hotel will increased by using emerging technology like AI, Blockchain and Machine learning³⁹. A research findings shows that 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 technology⁴⁰.

2.1.2.2. Operation cost reduction

Research in the hotel sector and other related fields has consistently shown that using technological solutions can boost efficiency, cut down on operational expenses, and

increase output. This, then, hotels can reduce their operational cost for using innovative technology like robots for routine tasks and reduce the numbers of low skilled workers⁴¹. Hotels and other hospitality business can lower their operational costs and reduce utilities expenses⁴². Hotel performance is boosted by the adoption of IT since it decreases staff expenditures and non-personnel tasks⁷. The former involves implementing measures to decrease personnel expenses and increase profitability, such as implementing an online registration system. The second category includes things like power management systems and food automation systems, which are related to raw materials. AI and service automation helps hotels in 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 revenue⁴³.

2.1.2.3. Profitability enhancement

Several empirical studies have examined the benefits of innovative services such as IT for increase operating performance which leads to gaining of hotel's profit³³ and adjusted technology based strategy to improve their declined profits⁴⁴. Profitability is defined as a rate of returns on capital, operational profit rate, net earnings rate, as well as return on entire assets rate⁴⁵. In hotels profitability can be measure by various dimension some of them are occupancy rates, restaurant turn over, reservation frequency. The level of occupancy plays a crucial role in determining a hotel's revenue⁴¹. A higher level of occupancy is a direct result of the service that unforeseen hotel booking apps give, which allows for the promotion of unoccupied rooms and the provision of accurate data in real time. These practices of optimum use of technology services reduce operational costs and additional revenue generate which leads to overall profitability⁴⁶. Hotels can rely on technology in various operations so that they can undercut their rivals on price and manage inventory at optimum profitability, which improve profitability⁴³.

2.1.3. Guest Satisfaction

Modern companies can't function without the idea of customer pleasure. In most organizations, customer satisfaction is seen as a key indicator because it is seen as a critical driver or by improving customer loyalty and Hotel performance, 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 guest¹⁵. To succeed, organizations must consider the wants and needs of their customers. Customer happiness has been a recurring theme in the works of numerous scholars and researchers. More study has been conducted around customer satisfaction, which is crucial. All the services offered by hotels should make the customers pleased. Despite its significance,

client happiness has lately been disregarded. Most service providers have realized this, and in recent years there has been an increase in the importance of customer satisfaction⁴⁷). This is supported by a study which found that technology usability is major predictor for customer satisfaction⁴⁸).

Hypothesis 3. Adopting IHTS is positively correlated with guest satisfaction in the hospitality industry.

Improving service quality, guest experience, and return motivation are the three variables used to quantify customer happiness to test Hypothesis 3. In what follows, we will elucidate these variables.

2.1.3.1. Service Quality

Any company that wants to succeed and last must first determine what customers value most and then work to provide it to them. When comparing interpersonal services with self-service systems in terms of client happiness, the former is more effective because human communication services are characterized by reliability, competency, efficacy, and happiness, all of which contribute to higher levels of client contentment and respect⁴⁹). On the other hand a research exhibits the importance of open innovation in improving service quality incorporating its components to determine the quality-of-service delivery in the hospitality industry and also elaborate the relationship between service quality and hotel business performance⁵⁰).

2.3.1.2. Guest Experience

Customer experience indicates how a brand or business meets their needs and expectations⁴⁷). Reviewing the research on client satisfaction is vital since, at its core, client service is about making sure consumers are happy with the goods or services they get. Variety of technology based service is necessary for improving guest experience¹⁵). Hotels nowadays use integrated AI service concept to provide new experience to guest, other integrated technology such as IOT, mobile internet, smart devices provide guests with whole new service experiences and high level of personalisation⁵¹).

2.3.1.3. Visiting Motivation

Satisfied customers are the lifeblood of a successful company since they are the ones who are most likely to recommend the brand to others, buy from them again, and generally have a good time⁴⁷). Previous study contributes to raising awareness of the importance of technology services and facilities for the futuristic plans of hotel guests⁵¹). A research 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 hotel⁵²).

Hypothesis 4. Hotel financial performance and employee performance are positively correlated.

Hypothesis 5. Hotel guests' satisfaction and financial performance are positively correlated.

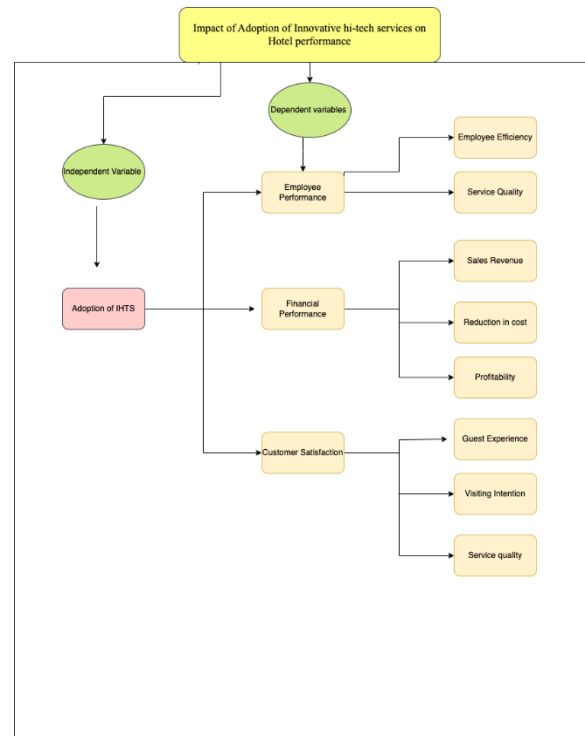


Fig. 2: Conceptual model of the study

Based on Figure 2 depicts the study's hypothesized model, showing that the implementation of cutting-edge hi-tech services improves hotel performance as determined by staff productivity, financial performance, and guest happiness. On the questionnaire listed in the section below, each of the three components has a set of variables that are evaluated independently.

2.2. Research Gap

Although there is an increasing amount of research on the implantation impact of innovative hi-tech services in the hotel industry, significant gaps persist, especially regarding the Indian context. Multiple elements of technology deployment and its effects on hotel performance have been the subject of prior studies. these findings frequently lack regional specificity and do not fully encompass all performance dimensions, including employee performance, financial results, and guest satisfaction. The beneficial effects of smart services on the efficiency and effectiveness of hotel employees⁵³). This study concentrated on operational benefits, neglecting the wider financial implications and guest satisfaction outcomes, thus creating a gap in the understanding of their holistic interaction. In a previous research the author look for the satisfaction and performance expectations associated with metaverse adoption in tourism SMEs, findings indicate the potential of new technologies to transform customer experiences. The research did not explore their practical implementation in traditional hotel environments or their impact on employee and financial performance⁵⁴). A study conducted on effects of AI-driven personalised services on guest satisfaction in Serbia and

Hungary⁵⁵). The study offers valuable insights into guest satisfaction; however, it fails to analyse the impact on financial performance and employee efficiency, resulting in an incomplete understanding of overall performance benefits⁵⁵). Another study examined the impact of information technology adoption on hotel performance in a developing nation. This study provides essential evidence regarding the financial and operational advantages of IT adoption; however, The effect of these innovations on guests' happiness is not investigated or employee performance, especially within the culturally distinct and diverse Indian market⁷).

A research conducted a thorough analysis of e-commerce costs and their relationship with hotel performance indicators. This study primarily emphasises financial metrics, while employee performance and guest satisfaction receive minimal consideration⁵⁶).

The identified research gaps highlight the necessity for a thorough examination of the impact of innovative hi-tech services on multiple aspects of hotel performance, particularly within the Indian context. Addressing this gap will enhance comprehending the connection between implementing technology and the efficiency of staff, financial outcomes, and guest satisfaction, which is crucial for formulating strategies to optimise hotel performance comprehensively. The empirical findings related to the effect of technological advancements on the efficiency of the hotel sector inside the India has very limited. All of these are the crucial reasons to conducting this current study.

3. Methodology

This study employs a quantitative research approach to investigate the impact of innovative high-tech services on hotel performance. A survey-based design was adopted to collect primary data, allowing for the examination of relationships between variables through statistical analysis. The overall research methodology was structured to systematically address the study's objectives, moving from conceptual model development to data collection and subsequent analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM).

3.1. Data Collection

From January to October 2024, data was collected in the Delhi NCR area from hotel managers operating 5-star and 5-star deluxe establishments (as per the classification standards of the Ministry of Tourism, Government of India) using a self-administered questionnaire. As the political and economic center of India, Delhi is a popular tourist destination and a major economic driver. It is also the capital of the country, making it an attractive business location. Gurugram and Noida, two satellite cities, have seen a dramatic increase in business centers, raising the need even further. Another new hub for business and

transit travel is aerocity in New Delhi. Responses were asked using a five-point Likert scale: 1 for strongly disagreeing, 2 for disagreeing, 3 for neutral, 4 for agreeing, and 5 for strongly agreeing. Managers from five- and four-star luxury hotels were the intended recipients. The data was collected using a self-administered questionnaire survey using a convenience sample method. Out of a total of 28 hotels that were chosen at random, 41 agreed to let us collect their data. Out of 485 questionnaires that were sent out to guests, 385 filled them out, and the vast majority (76.6%) of those people identified as male. An uneven distribution of ages was seen, with 35.1% of respondents falling between the ages of 26 and 30 and 28.1% between the ages of 31 and 35. The percentage of individuals with graduate degrees was 65.5%, and the percentage with postgraduate degrees was 28.8%. Managers made up 35.1% of the total, while Assistant Managers accounted for 42.9%. Of the participants, a considerable number (60.8%) have 6-10 years of experience. The Food & Beverage Service department is the most represented with 35.3 percent of the total. Table 2 displays the demographic profile of the respondents, who represent a representative sample for the purpose of investigating the impact of technological services on various facets of hotel performance. Respondents span a wide range of job titles, levels of experience, and critical operational departments.

Table 2: Respondents' Demographic Profile

Demographic variable		n-385	Percent
Gender	Male	295	76.6
	Female	90	23.4
Age	20-25	18	4.7
	26-30	135	35.1
	31-35	108	28.1
	Above 35	124	32.2
Educational Qualification	Diploma	1	0.3
	Graduate	252	65.5
	Postgraduate	111	28.8
	PhD	21	5.5
Designation	General Manager	2	0.5
	Manager	135	35.1
	Assistant Manager	165	42.9
	Supervisor	83	21.6
Experience	0-5	17	4.4
	6-10	234	60.8
	11-15	100	26
	16-20	34	8.8
Department	Front office	90	23.4
	Housekeeping	55	14.3
	Food & Beverage Service	136	35.3
	Food Production	92	23.9
	Others	12	3.1

4. Results and analysis of data

The method of structural equation modeling, or SEM, was employed to analyze the data. Structural Equation Modeling (SEM) is a second-generation technique that facilitates the concurrent modeling of numerous variables that are both independent and dependent. The SmartPLS 4.0 application for partial least squares (PLS) was utilized to assess the data. The model for measurement and the model of structures are the two employed to analyze the data. The measurement model expresses the link between latent components and their relevant variables, whereas the structural model illustrates the causal relationship between the constructs⁵⁷.

4.1. Assessment of the measurement model

The results of the model's measurement evaluation, conducted using the PLS algorithm, as presented in Table 3, demonstrate sufficient reliability and validity. The investigation assesses convergent validity and internal consistency. Internal consistency is evaluated using composite reliability (CR), while convergent validity is calculated using average variance extracted (AVE)⁵⁸. Convergent validity was sufficiently demonstrated when the average variance extracted (AVE) for each construct was greater than the 0.50 requirement. As it cannot account

for more than half of the variance by item or variable, an AVE value of less than 0.5 is unacceptable^{59, 60}. It was proven to be discriminant valid when the square root of each construct's AVE was higher than its association with any other construct, indicating that the constructs are unique and not just representing the same underlying phenomenon. To establish internal consistency, Fornell and Larcker (1981)⁶¹ suggested that the value of CR must be equal to or higher than 0.7. All structures demonstrated exceptional composite reliability (CR) values, above the advised criterion of 0.70, every piece has a CR number greater than 0.8. Additionally, Table 3 illustrates that all dimensions had Cronbach's alpha values above 0.7 revealing that all dimensions in this model exhibited internal consistency⁶².

As shown by the CR and AVE values, the main results of the measuring model study were acceptable degrees of accuracy, convergent validity, and discriminant validity. This means that the model is reliable, consistent, and valid at the point where it meets the data.

An important aspect of structural equation modelling is to use discriminant validity to assess differences between different constructs in a model⁶¹, which case discriminant validity is considered to be obtained when inter-construct correlations are less than the root of the square of the average variance extracted (AVE) represents, while non-

Table 3: Measurement model

Construct		Indicators	Loading	AVE	CA	CR
Adoption of IHTS	Adoption of IHTS	AIHTS1	0.997	0.994	0.997	0.997
		AIHTS2	0.998			
		AIHTS3	0.997			
Employee Performance	Employee Productivity	EP1	0.565	0.602	0.881	0.959
		EP2	0.56			
		EP3	0.564			
	Service quality	SQ1	0.941			
		SQ2	0.942			
		SQ3	0.941			
Financial Performance	Cost reduction	CR1	0.768	0.623	0.709	0.959
		CR2	0.773			
		CR3	0.67			
	Sales revenue	SR1	0.724			
		SR2	0.704			
		SR3	0.706			
	Profitability	P1	0.977			
		P2	0.945			
		P3	0.975			
Guest Satisfaction	Guest Experience	GE1	0.994	0.546	0.73	1.002
		GE2	0.995			
		GE3	0.994			
	Standard of services	SS1	0.774			
		SS2	0.774			
		SS3	0.674			
	Return Motivation	RM1	0.651			
		RM2	0.723			
		RM3	0.74			

Note: AVE stands for "average variance extracted," CA for "Cronbach's Alpha," and CR for "composite reliability."

Table 4: Discriminant validity

Construct	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

Note: AIHTS – Adoption of Innovative Hi-tech Service

covariance values indicate correlations between constructs referred in Table 4. The discriminant validity of the variables (AIHTS, Employee Performance, Financial Performance, and Guest Satisfaction) is supported by the AVE values and the Fornell-Larcker criterion. These results provide credence to the measurement model's discriminant validity by indicating that each component is separate and accounts for its own variance.

4.2. Analytical framework

Figure 3 displays the structural model. In the model, the interrelationships between the different components are depicted. Using Smart PLS 4.0's bootstrapping technique, we can verify these linkages.

4.3. Coefficients of standardized paths

The structural equation modeling process cannot be completed without these outputs. They account for the scale of measurement and show the direction and intensity of the interactions between factors in a structural equation model. When comparing the strength of correlations, standardized coefficients are useful since they are unitless, unlike unstandardized correlation coefficients that rely on the metric factors of the variables. A method for determining whether standardized route coefficients are

statistically significant⁵⁷⁾. Structured equation modeling has benefited greatly from the contributions of David W. Chin, a renowned Figure in the area of structural equation modeling. Using the data and analysis at hand, Chin's guideline recommends standardized path coefficients of 0.2 or higher, preferably over 0.3, for statistical significance. What this signifies is:

- Interactions between variables along a standardized path are modest when the coefficient is 0.2 or higher; this suggests that the variables are not highly related to one another. An association between the constructs or variables being evaluated is reasonably significant when the coefficient of correlation is 0.2 in this context.
- The presence of a standardized path coefficient of 0.3 or above suggests a reasonably strong link between the variables. That the factors influence each other to a greater and more significant degree is supported by this.

4.4. Evaluation of the model's structure and its assumptions

Employee performance, financial performance, and visitor satisfaction—as well as their sub-elements—are just a few of the factors that have been thoroughly examined in this study. Table 5 shows the results of the rigorous testing of hypotheses, which have important significance for the hospitality industry and academia.

The bootstrap statistic is a good approximation of the data's normalcy. As a result, we validated the structural path importance using bootstrapping. A two-tailed t-test with a 5% significance level was used with a large subsample size of 5,000. Table 5 shows that most of the t-statistics in this investigation are more than 1.96. It follows that the inner model's path coefficients are all significantly different from zero. The results of this study corroborate the previous ones.

The study model's predictive power can be assessed using the Stone-Geisser's Q2 values, which are cross-validated redundancy measures. For example, according to Hair Jr. et al., 2017c, Q = 0.02, 0.15, and 0.35 indicate that an exogenous construct has a moderate, medium, and significant predictive relevance for an LV, respectively⁵⁷⁾. The present research found that Q2 for financial performance was 0.015, for employee performance it was 0.052, and for visitor pleasure it was 0.005. Therefore, it is

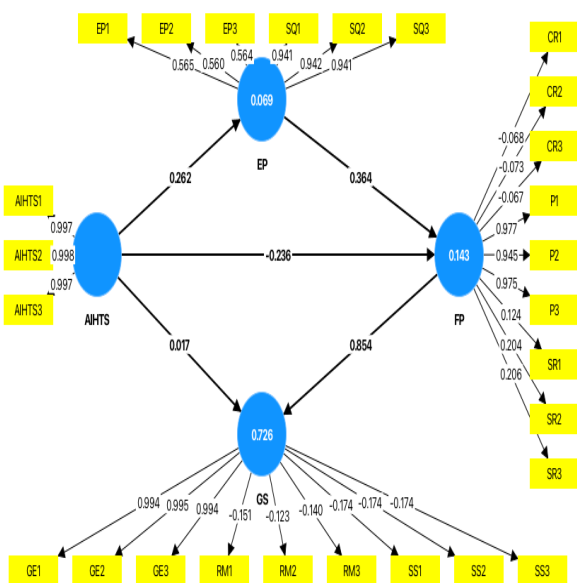


Fig. 3: Structural model results

Note: AIHTS – Adoption of Innovative Hi-tech Service, EP: Employee Performance, FP: Financial Performance, GS: Guest Satisfaction

Table 5: Structural model analysis findings for testing hypotheses

Hypothesis	path coefficient	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
AIHTS -> EP	0.262	0.081	3.248	0.001	Supported
AIHTS -> FP	-0.236	0.064	3.693	0	Supported
AIHTS -> GS	0.017	0.028	0.614	0.539	Not supported
EP -> FP	0.364	0.067	5.446	0	Supported
FP -> GS	0.854	0.024	35.758	0	Supported

Note: AIHTS – Adoption of Innovative Hi-tech Service, EP: Employee Performance, FP: Financial Performance, GS: Guest Satisfaction

reasonable to say that the measurement model is suitable, and that the structural model is highly relevant for making predictions about the three constructs.

Figure 3 shows that the model's predictive power was moderate for financial success ($R^2=0.143$) and employee performance ($R^2=0.069$), but great for visitor satisfaction ($R^2=0.726$). Consequently, 57.2% of the variation in employee performance may be explained by the deployment of IT. The use of IT also accounts for 65.6% of the variation in financial results. See Figure 3 and Table 5 for details. With $\beta = 0.262$ and $p < 0.001$, the first hypothesis, H1, which stated that the adoption of AIHTS would result in improved employee performance, was confirmed. Similarly, hypothesis H2, which stated that the implementation of AIHTS will result in improved financial performance, was similarly validated ($\beta = -0.236$, $p < 0.001$). There was a positive correlation ($\beta = 0.364$, $p < 0.001$) between Financial Performance and Employee Performance, just as anticipated in H3. No evidence was found to support hypothesis H4, which stated that there was a positive relationship between AIHTS usage and Guest Satisfaction ($\beta = 0.017$, $p = 0.539$). Financial Performance and Guest Satisfaction were found to have a high positive relationship ($\beta = 0.854$, $p < 0.001$). According to hypothesis H1, hotels that implement IHTS see an uptick in performance from their staff, particularly in terms of service quality and productivity. Therefore, H1 is confirmed. Furthermore, according to hypothesis H2, HP's financial performance (sales revenue improvement, operational cost reduction, and overall profitability) is significantly impacted by the deployment of IHTS. According to hypothesis H3, there is no evidence that the implementation of IHTS significantly impacts HP in terms of guest satisfaction, as measured by factors such as guest experience, service standard, return motivation, and overall satisfaction. This proves hypothesis H3. Also, hotel financial performance is positively correlated with staff performance, as hypothesized in hypothesis H4. Therefore, H4 is correct. Additionally, as hypothesized in H4, a positive correlation exists between hotel financial success and guest pleasure. This lends credence to hypothesis - H4.

5. Conclusion and Implication

The point of this study was to find out what happens to

hotel performance when new high-tech services are used, especially in the Delhi NCR region. To help reach this goal, a proposed causal model is made based on existing research and looked at for assumed relationships. The proposed research model of this study uses data from 385 hotel managers in the Delhi NCR region to measure hotel performance by looking at employee performance, financial performance, and guest satisfaction.

The performance of employees is judged by how much they improve their work and the quality of their service. The performance of the business is measured by how much money it makes, how much it spends, and how profitable it is overall. Finally, the satisfaction of guests is judged by how well the experience and quality of service improve for them. The major result of this study is that using IHTS influences how well a hotel does its job, as shown by how well its employees do their jobs. This result agrees with recent research which suggests that the use of technology has changed the roles of employees in the hospitality industry^{4,7,63}. To create a tech-savvy culture and make sure that technology is used effectively, a staff training program and a change in management strategy are put in place. The outcome is also in line with what other researchers found, which is that putting IT to use makes staff better at what they do^{64, 65}. Adopting new high-tech services has a big effect on how well a business does financially. This result backs up what research which results shows that implementing technology can improve operational efficiency and financial performance by lowering costs and raising revenue and profit^{66,67}. Another research shows that using technology can improve a hotel's financial performance by making it more profitable in the long run⁷.

One more important finding is that guest satisfaction is strongly linked to IHTS adoption. Researchers found that adding technological services makes customers more interested, happier, and eventually more loyal^{15,54,68}. Technology that made it easier for people to co-create and offer experiences that made hotel guests' stays better⁶⁹. As technology makes travel faster and more enjoyable, it seems to have the opposite effect on people's plans to visit new services have a big effect on their desire to come back^{51,53}. This could be because people want to try the newest technology while they're living in hotels, which could make them want to go. IHTS may also have less of

an effect on usage if users are persistent and flexible. This is because it takes some time for hard systems to become easy to use. It is important for the use of new technology that people are ready to accept it.

The study also shows that there is a strong link between how well employees do their jobs and how well the business does financially. This finding fits with what research found, which is that happy and productive employees lead to better business results^{56, 70}. The results of this study, on the other hand, don't match up with those³³, which says that financial performance and staff performance have had different goals and strategies⁷¹. Other studies have shown that new technologies have a good effect on the customer experience. By putting technology to use can affect how happy guests are with the level of service⁷². These technologies give hotels the power to improve the experiences of their guests, make their operations more efficient, and gain a competitive edge⁷³. The study investigated how new ideas could help businesses make more money, keep customers happy, use their resources more efficiently, and do better overall.

5.1. Theoretical Implication

This study enhances the current literature regarding the adoption of novel high-tech services and their effect on hotel performance within the Indian context. The results correspond with prior studies highlighting the beneficial correlation between technology adoption and employee performance, especially regarding enhanced productivity and service quality. Furthermore, the study substantiates the idea that the deployment of technology can augment financial performance by increasing revenue, decreasing costs, and enhancing profitability. This research significantly contributes by demonstrating the favourable impact of employee performance on financial performance, consistent with current literature regarding the relationship between employee engagement and organizational success. The discovery that AIHTS adoption could adversely affect guest visiting intentions in the short term, owing to the learning curve linked with new technology, introduces a nuanced viewpoint to the current literature. This discovery highlights the necessity of acknowledging initial resistance to change and the requirement for efficient training and support systems to alleviate this adverse effect. The study's emphasis on the Delhi NCR region offers significant insights into the unique setting of a swiftly evolving metropolitan landscape in India, where the integration of modern technologies is essential for maintaining competitiveness in the hospitality industry.

5.2. Practical Implication

The findings of this study provide crucial and actionable repercussions for the hospitality industry. These ramifications guide managers toward enhancing hotel performance through strategic use of technology and the

development of human capital. Investing in and using advanced technologies enables hotels to enhance staff performance, improve operational efficiency, and ultimately increase financial performance. It is imperative that this investment be accompanied by thorough employee training programs in order to guarantee proficiency and cultivate a culture that is focused on technology. Hotels are able to directly increase service quality and efficiency, which, according to our studies, is a significant driver of financial success. This may be accomplished by providing their staff with an effective set of tools.

Second, the data highlight the critical role that employee performance plays as a direct conduit to financial prosperity with regard to the organization. In addition to the initial adoption of technology, managers are required to make ongoing investments in employee development programs that focus on digital literacy, problem-solving with new systems, and utilizing technology to improve interactions with guests. The hotel's bottom line is immediately impacted by personnel who are high-performing and knowledgeable about technology. These employees not only provide exceptional service, but they also make major contributions to the reduction of operating costs and the development of income.

The findings underscore the need of comprehending and satisfying guest expectations for technology adoption. Although technology can improve the visitor experience, it is essential to guarantee that the adoption of new technologies is intuitive and aligns with guest preferences. This may entail delivering sufficient training and assistance to guests, guaranteeing system dependability and user-friendliness, and consistently collecting feedback from guests to enhance the technology adoption process. Lastly, the research suggests that the integration of technology should be approached in a way that is both balanced and holistic. Although technology offers several advantages, it is crucial to acknowledge the potential obstacles and handle them preemptively. This entails guaranteeing that the deployment of technology does not adversely affect employee morale or result in unanticipated repercussions for the hotel's operations.

5.3. Limitations and Future Research

There are some limitations with this study that should be looked at in future research. The sample size and geographical breadth of research may restrict the generalizability of outcomes. Subsequent research ought to use larger and more heterogeneous samples to improve how accurate the results are in other places. Secondly, the research utilized cross-sectional data, which constrains the capacity to ascertain causal linkages. Longitudinal studies are essential to examine the enduring effects of AIHTS implementation on hotel performance. Furthermore, subsequent study may investigate the moderating or

mediating influences of additional variables, including hotel size, type, and location, on the correlation between AIHTS and hotel outcomes.

Further studies should analyse and do the comparative study between major cities of India and world to give a summary of the tourist industries in these countries and point out what they have in common and what makes them different. Lastly, the study's measurement tool could be used to investigate how innovative high-tech services are adopted in other fields and how they affect different types of businesses.

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