

ROLE OF SERVICE AUTOMATION ON GUEST EXPERIENCE OF HOTEL INDUSTRY

Abstract

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Purpose – This study examines the impact of service automation (SA) on value creation (VC) and guest experience (GE) in the hotel industry to provide recommendations on how the hotel industry can rebuild from the impact of Covid-19 and meet future growth challenges.

Design – The constructs of the variables were considered from previous literature. A two-step questionnaire was created to first identify demographics, years of experience, etc., and a later portion of the questionnaire was based on a 5-point Likert scale to identify our intended proposal.

Methodology – A sample of 290 Indian hotel customers was considered. The focus of the preliminary study was on the psychometric properties of the scale constructs. This study focused heavily on the validity and reliability of the scales. The first-order constructs, SA Practises, Service VC, and GE, were tested for validity and reliability. Structural equation modelling (SCM) is used to determine the effects of SA on VC and GE.

Approach – The identified factors were confirmed with confirmatory factor analysis (CFA) and the SEM technique was applied to reveal the exclusive as well as the complex relationships between SA, VC and GE.

Findings – The results show that both SA and the service VC have a positive influence on GE. SA has an indirect and significant influence on GE, with the service VC playing a mediating role. The results show that both factors, SA and VC, have a positive influence on GE in the hotel industry, but SA has an indirect and significant influence on GE, and VC plays a mediating role.

Originality of the research – the study suggests that SA may be able to improve GE in the hotel industry through its influence on VC.

Keywords Service Automation; Value Creation; Guest Experience; Structural Equation Modelling; Hotel Industry

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INTRODUCTION

The hospitality & tourism industry is multidimensional, multifaceted, and poses challenges and new prospects for practitioners as well as academics (Aimilia, 2021). During the Covid-19 time of turbulence and crises, the service sector suffered the most (Škare et al., 2021). Covid-19 has impacted each sector across the globe except few medical industries, and the hotel industry is among the hardest hit and the recovery to pre-Covid-19 could take until 2023 or later (Krishnan et al., 2020). The unprecedented level of disruption was the result of local lockdowns, travel restrictions, cancellation of flights, trains around the globe from partial closure to longer closures. The immediate impact was steep drop in revenue as business travellers remained in lockdowns (GTIL, 2020). Hospitality will witness both subtle and substantial shifts in the post-pandemic era and the reflections are apparent (Krishnan et al., 2020). Transformative research on the service sector was required to add service innovations that focussed on multiple aspects to aid in resolving the crisis (Prentice et al., 2021). Service innovation in the form of an application of AI and automation is considered a catalyst (Kim et al., 2021). Since the pandemic, the hotel industry has opened to more contactless digitised technologies in the form of AI and automation (Pillai et al., 2021).

Vacation and weekend travel is gaining popularity (Travel World, 2021). International tourism leapt forward by 182% in January-March-2022 compared to the previous year in the same quarter (UNWTO, 2022). The global leisure travel market size was valued at \$1,006.5 billion in 2019 and is projected to reach \$1,737.3 billion by 2027, registering a CAGR of 22.6% from 2021 to 2027 (Allied Market Research, 2022). The travel market in India is projected to reach US\$ 125 billion by FY27 from an estimated US\$ 75 billion in FY20. By 2028, international tourist arrivals are expected to reach 30.5 billion and generate revenue

of over US\$ 59 billion (IBEF, 2022). Foreseeing the growing influence of the tourism sector as a major economic powerhouse and employment generator, the hotel industry must be ready to meet the challenges for sustained growth (Government of India, Report, 2021).

Six AI-driven Hospitality Trends such as, *Cloud Migration*, *Admin Automation*, *Hotel Apps*, *Social listings*, *Location-Based Service* and *Touchless experience*, that have taken the industry by the edge of innovation and changing the landscape of the Hospitality sector in India (Daga, 2022). 94% of leaders of service industry systematically track return on investment (ROIs) in automation across organisation, compared to 47% of laggards (Poojary & Krishna, 2022). India's hospitality sector is snowballing, with an expected 15.2 percent rise by 2025 due to AI inclusion in system (Daga, 2022). AI is consistently playing an important role in hospitality management during the post-Covid-19 period, predominantly because of its ability to carry out traditional human functions accurately at any time, potentially saving significant money, eliminating human error, and delivering superior service. With AI, the possibilities for improving customer service aspects are almost endless, ranging from increased personalisation to tailored recommendations (Revfine, 2022).

The value of accurately knowing guests is the most fundamental to understanding and delivering an incomparable GX (Batat, 2019). 86% of customers take the advice of others before deciding, 81% read reviews before booking a hotel, and 78% focus on the most recent reviews (TripAdvisor, 2019). GX is a vital business goal and driver for competitive advantage in the luxury industry (Klaus, 2022). Hotel strategies have evolved from replicating market strategies of product marketing to service marketing in providing a pleasant GX (Çınar et al, 2020). GX in a hotel is the overall satisfaction customers get with the interactions with a hotel from booking to check out (Baek et al., 2020). Hotels are becoming more conscious of service value building rather than the status quo for the GX (Bharwani & Mathews, 2021). A smart hotel is a modern concept in the hospitality industry with continuous investment in technological amenities (Yang et al., 2021). Automation will completely change the environment of tourism and hospitality with new job profiles such as maintenance and repairing of robots, kiosks, big-data, machine software and hardware, and automation process planning & control etc. (Ivanov, 2020). The ever-growing popularity of robot services in human life shapes the boundaries between robotics and human life and hotel industries are in tandem adopting robot-based automation in their business properties (Lee et al., 2021).

Exceptional experiences outline the high point of human longing, especially among luxury customers (Klaus, 2022). Frontline employees contribute cognitive, practical, and discursive service innovations as driving value propositions (Murray, 2022). In this hospitality sector, customer experience is the confidence builder that can determine future customers' views and viewpoints towards a particular hotel or hotel brand (Rahimi & Kozak, 2017). The memory of an experience trumps the real experience, and everything is relative, and every experience is equated through the lens of comparison to expressive reference points (Lax, 2012). To make the GX long-lasting one, hotels should consider designing customer experiences, their measurement and analysis by extensive customer loyalty (Lax, 2012).

The tourism industry is expanding in multiple regions across the globe and has become the key driving point to boosting global luxury hotel market growth. Again, an increase in disposable income and inclination toward leisure travel among middle and upper-segment individuals are the key catalysts expected to propel global hotel market growth (Globe Newswire, 2022). Limited studies have examined the antecedents and outcomes of the GX of luxury hotels (Shahid & Paul, 2022). Customers are no more just unreceptive rather they construe experiences into models in their minds and pass on their experiences to a prospective friend, or relative intending to avail hotels in similar locations (Lee et al, 2018). To cope with ever-changing consumer preferences and to generate a meaningful interface, hotels try to offer superior services demanded by customers latently or physically by mixing human, physical and emotional magnitudes (Apostolakis et al., 2020). Studies are required to unearth cognitive factors and their components for greater insight into impacting forces detrimental to customer experience (Alnawas & Hemsley-Brown, 2019). The contribution of this paper is presented as (a) designing an inclusive framework of autonomous service, VC and the customer experience in the hotel industry, (b) analysing the impact of autonomous practices on both VC and GX, and (c) recommending the outcomes for future studies. The findings will lead to validation or argumentation of the roles of service automation or VC on the GX. To test our hypothesis, we have employed structural equation modelling to find out the links and impacts of service automation will make on GX of hotel industries.

1. LITERATURE REVIEW AND THEORETICAL BACKGROUND

Research Papers and useful articles were explored from popular portals such as T & F (Taylor & Francis), Emerald, EbscoHost, ProQuest, Elsevier, and Google Scholar. An initial search was for theoretical background and later for hypothesis development. 38-articles were analysed for our study consisting of publication houses such as Taylor & Francis -11, Emerald -9, ScienceDirect-Elsevier -7, Emerald Book Series-2, Elsevier -1, Sage -1, MDPI -1, Inderscience -1, African Journals Online- 1, Washington State University -1, University of South Florida- 1, Macrothink Institute -1, and Conference -1. Publications from the year 2013-2022 (June) were considered for an in-depth literature review to identify concerned variables related to automation, VC and GX in the hotel industry.

1.1 Theoretical background

The study focuses on service innovation strategy in the hotel industry for sustainable development in managing crises during the pandemic period. The hospitality industry often practices traditional management theory and industry-specific experiences. Contemporary trends concentrate on practices that concurrently benefit several characteristics of a business, such as those encouraging employee productivity, quality improvement and branding (Poster, 2022). Theories provide a basis for developing explanations for observed phenomena in subsequent studies (Fehr & Schmidt, 2006). Theory offers a foundation for generalising patterns which are applied in forecasting, planning and problem solving (Holmström et al., 2009). Among the modern management theory approaches (quantitative approach, system approach and contingency approach), Contingency Theory is the most suitable for this study (Technofunc, 2020) considering Covid-19 influence on the industry. Hospitality industry in Covid-19 atmosphere collapsed and survival of this industry was based on application of Contingency Theory (Inkinen et al., 2021). The Contingency Theory was created by Fred Fiedler in the 1960s that guides leaders to use best leadership strategy after assessing any situation (Fiedler, 2015). The Contingency Theory is most suitable to everchanging modern workplaces with changed leadership styles with changed technological environment (Hanelt et al., 2021).

Service innovation and proposition-based reforms through AI-based automation are socio-cognitive resources actors rely on to attain evaluations, valuation of situations and value of overall satisfaction (Simpson, 2020). Permatasari & Mahyuni (2022) found lodging industry in a tourist destination like Bali, Indonesia was greatly affected on the shadow of Covid-19. Contingency Theory and the guiding principles like improved communication, open leadership styles, contingency plans, organization culture, and business tools etc were advised as crisis management practices to be adopted to come over the crisis. Kankaew & Pongsapak (2020) found contingency theory applicable on the most sensitive air transportation industry of Thailand during and after the pandemic-palliative period. Alterations in the industry were made to survive and strive to achieve a new goal on account of new Covid-19 guidelines like social distancing, which were covered with unique different strategies to have competitive advantage. Barbhuiya & Chatterjee (2023) found small and medium-scale hospitality sector adopted coping strategies such as price discounts, cost-cutting, brand building and revenue generation with innovative strategies and visionary leadership that endure in the long run to withstand the effect of Covid-19 effects. Ajmal et al. (2022) indicated that supply chains of service industries are deploying crisis strategies to safeguard their business and stakeholders. Digital transformation, improved customer service and few allied operational changes are being focussed to nullify the ill effects of Covid-19 impacts. Childs et al. (2022) observed small retail businesses are vulnerable to Covid-19 turbulence and their managers/owners focussed on strategies related to preserving stakeholder relationship, showing passion, agility, innovation, and relationship development. Kumar et al. (2021) evaluated risk mitigation strategies for Perishable Food Supply Chains, which were considered essential services during, and aftermath of pandemic Covid-19 underpinned by contingency theory. Proactive business continuity planning and mitigation strategies concerning the socio-economic contingencies were discussed in their study. Modgil et al. (2022) recommended an AI-facilitated supply chain as a contingency management during extreme disruption scenarios to activate operations quickly. Vrontis et al. (2022) study on Lebanese health care centres during Covid-19 pandemic found dynamic managerial innovative practices positively impact on competitive advantage, and non-financial performance. The health care sectors need new tactics and procedures for meeting the turbulent environment.

1.2 Literature Review and development of hypotheses

1.2.1. Service Automation (SA) in Hotel Industry

There is a creeping incursion of RAISA into TTH (travel, tourism, and hospitality), there are major concerns that the TTH industry must consider regarding automating TTH services (Ivanov & Webster, 2019). RAISA (Robots, AI, and SA) with the capacity to play a crucial technical function are being applied across a range of service functions in the hospitality and tourism industries, facilitating effective marketing and industry sustainability (Ogle & Lamb, 2019).

The exhaustive nature of information exchange between firms and customers entails consistent communication in the hospitality industry. Excessive high contact between them is displeasure arising from uncomfortable emotion-inducing encounters (Ukpabi et al., 2019). Robots and AI equipped with smart technologies have numerous advantages confirmed by researchers and hotel managers (Luo et al., 2021; Leung, 2019). The evolution of chatbot-based solutions needs upskilling, system-innovation and requires investments to meet the challenges of e-Tourism (Calvaresi et al., 2021). Lee, Y *et al.*, (2021) studied fundamental perceptions of the hotel guests' behaviour in using robots to avail service and found six factors, three functional aspects and an emotional aspect. From pre-arrival to assessment, guests using robots, AI and service automation in hotels have mixed responses; more than half indicate service will improve with the robot and be better suited at reception combined with humans (Lukanova & Ilieva, 2019). Effective staff schedules in hotels can reduce waiting-time, optimal staff engagement, and effective customer service (Kadry et al., 2017). An effective combination of guest-demand patterns and minimum employee engagement will reduce employees' challenging work schedules (Piso, 2022), and an IoT-based employee scheduling is the only available solution (Wang et al., 2021). The emphasis to replace employees with AI-assisted Hotel Task Management systems is on the agenda of the millennium. Among the four most suitable service categories check-in, reception services, wellness, and food & beverage services, the last one is found to be the most suitable (Rauf et al., 2022). Service system design improves with AI-assisted automation, software program and human capital workplace improvements to enhance guest satisfaction (Maier and Edwards, 2020). Implementation of AI technologies improves talent management practices which improves task management

or service quality and hence customer satisfaction (Ruel & Njoku, 2021). Customers' decision process making depends on online guest reviews regarding service quality. Automated guest reviews or feedback systems favours luxury hotels and their business (Vo et al., 2022). Attributes related to hotel, staff, room, and travel are highlighted in reviews after hotel guests' satisfaction or dissatisfaction is reflected therein (Padma & Ahn, 2020). AI offers electrifying opportunities for word-of-mouth-based insights, measuring and enhancing customer loyalty and trust (Laškarin Ažić et al., 2020).

From the above literature analysis, we can formulate the following two hypotheses:

- H_1 : SA has direct positive influence on VC in hotel industry
 H_2 : SA has direct positive influence on GX in hotel industry

1.2.2 Value Addition/ Creation (VC) in Hotel Industry

Innovative organizations improve their overall customer satisfaction or experience and engagement with VCs offers as a powerful tool to achieve targets (Arcese et al., 2015). A consistent understanding of value, VC and value co-creation are interrelated (Hansen, 2019). The relationship between automation services in tourism and hospitality has been rapidly flourishing and has led to new service landscape where robots and automation is gaining both practical and research attention (Fusté-Forné & Jamal, 2021).

The relationship between sense experience and related experience to avail a hotel service for information sharing is controlled by disruption events. Intelligent operations to address these disruptions significantly affect customer satisfaction (Chen et al., 2021). Media richness can play an important role in vibrancy and interactivity, influencing customers' information pursuit and sharing behaviours (Lee, S.A. et al., 2021). The service improvisation competence develops standardized service and streamlines the service personnel of hotels and their operations. Both standardized service and streamlined service personnel have a direct influence on GX (Secchi et al., 2020). Optimism and innovativeness of hotel management in implementing self-service technologies in streamlining service personnel positively influence service quality and customer satisfaction (Huy et al., 2019). Streamlined service personnel takes care of guests' needs, offer friendly approaches, have a professional attitude, and have problem-solving skills (Lam & Cheung, 2018). Online visibility of hotels and their value additions on internet portals affects reputations beyond an optimal limit (Cioppi et al., 2019). After gaining significant reputations based on reviews, asymmetric dependence on the internet visibility is to be reduced (Neirotti & Raguseo, 2021). Value addition such as happiness, guests' perceived excitement and positive feelings create a delightful experience (Goswami & Sarma, 2019). Factors such as staff, view and food quality are the major determinants of customer delight (Aktas-Polat & Polat, 2022). Service excellence and guest delight boost the guest's affective commitment to hotels (Panchapakesan et al., 2022). Barnes & Krallman (2019) identified the typology of customer delight in the form of fulfilment, charisma, professionalism, comparative, and problem-resolution delight. Hotel service quality determining customer delight are hotel-related, room-related, staff-related, and travel-related features (Padma & Ahn, 2020). Customer satisfaction has a substantial impact on customer trust (Trini & Salim, 2018). The green image of hotels has an indirect effect on customer satisfaction and trust (Assaker et al., 2020). The study by Hartono & Raharjo (2015) demonstrates moderating role of cognitive experience as marketing means of trust and customer satisfaction in the hospitality industry. Guests are motivated to write a review on the hotel by sharing social information about the negative scenario (Berezina et al., 2016). The hospitality industry is vulnerable to negative guests experience reviews as the decision process of prospective customers is highly influenced by social media and word of mouth (Fernandes & Fernandes, 2018). Hotel attributes such as perceived value, consumption emotion, and convenience impact customer satisfaction and path models are developed to deal with so (Wang et al., 2021). The study of Paulose & Shakeel (2022) examined the influence of perceived value on guest loyalty and found both guest loyalty and satisfaction are very strongly influenced by perception value and service experience. Mohammed et al. (2021)'s study indicates that perceived service quality impacts satisfaction and guest loyalty considering human, tangible and technical aspects. Bhat & Sharma (2022) indicated that task-technology fit, and luxury-technology fit have an impact on value enhancement, brand image, guest satisfaction and loyalty. The study of De Jorge & Suarez (2014) observed occupancy rate strongly depends on the geographical location and online reputation of a hotel. Liu et al., (2022)'s study revealed a fluctuating effect of occupancy rate on the GX and the relationship is complex.

H_3 : VC can directly enhance positive GX in hotel industry

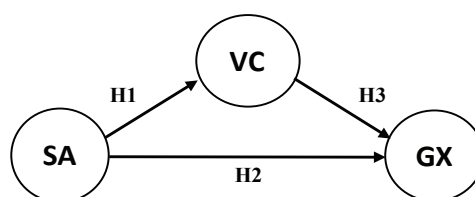


Figure 1: Proposed Model

Table 1: A: Brief Summary of Contingency Theory applied to studies

Author (Year)	Geography	Industry	Contingency Measure taken
Simpson (2020)			AI-based automation
Permatasari & Mahyuni (2022)	Indonesia	Lodging Industry	Improved communication, open leadership styles, contingency plans, organization culture, and business tools
Kankaew & Pongsapak (2020)	Thailand	Air transportation industry	Social distancing and implementation of unique strategies
Barbhuiya & Chatterjee (2023)	India	Small and medium-scale hospitality sector	Price discounts, cost-cutting, brand building and revenue generation with innovative strategies and visionary leadership
Ajmal et al. (2022)	--	Supply chains of service industries	Digital transformation, improved customer service and few allied operational changes
Childs et al. (2022)	USA	Small retail businesses	Preservation of stakeholder relationship, showing passion, agility, innovation, and relationship development
Kumar et al. (2021)	India	Perishable Food Supply Chains	Proactive business continuity planning and mitigation strategies
Modgil et al. (2022)	India		AI-facilitated supply chain
Vrontis et al. (2022)	Lebanon	Health care centres	Innovative tactics and procedures

B: Summary of factors and variables referred from Literature

Sl. No.	Factors	VAR	Variables	Items referred from Literature
1	Service Automation	SA-1	Chatbots Information Service	Luo et al. (2021); Leung (2019); Ukpabi et al. (2019); Calvaresi et al. (2021)
		SA-2	Interaction with Robots	Lee. et al., (2021); Lukanova & Ilieva (2019)
		SA-3	Automatic Employee Scheduling	Kadry et al. (2017); Wang et al. (2021); Piso (2022)
		SA-4	AI-assisted Hotel Task Management	Maier & Edwards (2020); Rauf et al. (2022); Ruel & Njoku (2021)
		SA-5	Automated Guest Feedback Management	Vo et al. (2022); Padma & Ahn (2020)
2	Value Addition/ Creation	VC-1	Accurate Information Sharing	Chen, S.H. et al (2021); Lee, S.A. et al. (2021)
		VC-2	Streamlined Service Personnel	Huy et al. (2019); Lam & Cheung (2018)
		VC-3	Standardized Service	Secchi et al. (2020)
		VC-4	Visibility	Neirotti & Raguseo (2021); Cioppi et al. (2019)
3	Guest Experience	GX-1	Guest Delight	Panchapakesan et al. (2022); Goswami & Sarma (2019); Padma & Ahn (2020); Aktas-Polat & Polat (2022); Barnes & Krallman (2019)
		GX-2	Trust	Assaker et al. (2020); Trini & Salim (2018); Hartono & Raharjo (2015)
		GX-3	Prevention of negative reviews	Wang et al. (2021), Fernandes & Fernandes (2018); Berezina et al. (2016)
		GX-4	Guest loyalty	Paulose & Shakeel (2022); Bhat & Sharma (2022); Mohammed et al. (2021)
		GX-5	Occupancy rate	Liu et al. (2022); De Jorge & Suarez (2014)

Source: Author

2. RESEARCH METHODOLOGY

2.1 Sample and data collection

The study aims to test whether service automation is solving the problems arising from the pandemic and aftermath in maintaining or improving the GX in hotels. The study is based on a survey questionnaire initially pre-tested with a small sample to detect any miss-out and consulted with methodology experts for face validity (Baute-Díaz et al., 2020). The technique used

in this study provides novel insights into the value-mediated diversity of automation services for experience creation in the hospitality industry (Ahmad et al., 2022).

India is a very large country. The Eastern part of India has 13-states and one union territory named, Odisha, Bihar, West Bengal, Jharkhand, Assam, Meghalaya, Arunachal Pradesh, Mizoram, Nagaland, Manipur, Tripura, Sikkim and Andaman & Nicobar Islands and there is an association named The Hotel & Restaurant of Eastern India, established on 18th July 1961 (HRAEI, 2022). The Eastern part of India is in focus of Government India for development of this region in Tourism, Industry, Sports, and Education (Indo-Asian News Service, 2016; Vision, 2020). The details geography of these states is mentioned below in Table 2.

Table 2: Research Area Geography

Sample Collection States	Area	Larger than famous Countries
Jharkhand*	79,716 km ²	Larger than 117- Countries (and dependencies) of the World including, Czechia (78,865 km ²) etc.
West Bengal*	88,752 km ²	Larger than 122- Countries (and dependencies) of the World including, Austria (83,871 km ²), Azerbaijan (86,600 km ²) and Serbia (88,361 km ²) etc.
Chhattisgarh* (Adjacent to Eastern part of India)	135,192 km ²	Larger than 138-Countries (and dependencies) of the World including South Korea (100,210 km ²), Iceland (103,000 km ²), Cuba (109,884 km ²), Bulgaria (110,879 km ²), North Korea (120,538 km ²), Nicaragua (130,373 km ²), Greece (131,990 km ²) etc.
Odisha*	155,707 km ²	Larger than 141- Countries (and dependencies) of the World including, Nepal (147,181 km ²), Bangladesh (147,570 km ²) etc.
Total	459,367 km ²	Larger than 180- Countries (and dependencies) of the World including, Sweden (450,295 km ²), Morocco (446,550 km ²), Zimbabwe (390,757 km ²), Japan (377,930 km ²), Germany (357,114 km ²), Philippines (342,353 km ²), Malaysia (330,803 km ²), Norway (323,802 km ²) etc.

Source: Woldometer and Government of India

As of 31st December 2020, there were 1,698 classified hotels in India including Deluxe 5-Star to 1-Star, Apartment Hotel, Time Share Resorts, Heritage Hotels, B&B Establishment and Guest House, who have implemented automation. The study was conducted in the Eastern Part of India consisting of States of Odisha (Total 20 Nos. hotels), West Bengal (Total 87 Nos. hotels), Jharkhand (Total 4 Nos. of hotels) and Chhattisgarh (Total 25 Nos. of hotels) (India Tourism Statistics, 2021). In Odisha 8 nos. of hotels could be contacted out of 20 nos. Similarly, 3 out of 87 from West Bengal, 1 out of 4 nos. in Jharkhand and 2 out of 25 nos. from Chhattisgarh state could be contacted through messenger. All the responding samples were from 4-Star to 7-Star Hotels. The details are mentioned in Table 3. The samples were collected from respondents willing to share their views by conveying the same while check-outs. Embedded questions were formed to go for online survey email invitations from prospective respondents (Christodoulides & Michaelidou, 2010; Wright & Schwager, 2008). Email IDs of willing visitors were collected, and a questionnaire was sent to their respective Email IDs through Google Forms (Jamalpur et al., 2021).

A total of 450 Emails were sent out, and 326 usable responses were gathered for analysis. The study was on a convenience sampling method. Sufficient time was offered to each respondent to respond. Due to various reasons, finally, only 290 numbers of valid responses met the minimum criteria (Krejcie & Morgan, 1970).

Table 3: Description of selected hotels and type of Automation used

State	Name of Hotels	Type of Hotel	Details of Automation Used
Odisha	Swosti Grand	4-Star	Cloud Storage of Customer Information, Reservation Automation
	Mayfair Lagoon	Deluxe 5-Star	Operations Automation, Hotel Applications for keeping track of guests
	Ginger Bhubaneswar	3-Star	Touch less Check-in and Check-out, Procurement Automation
	Kalinga Ashok	3-Star	Hotel Inventory Automation, Location Based Services
	Fortune Park Sishmo	4-Star	Room Block Automation, Automated Billing System
	Hotel Hindustan International	5-Star	Social Listings, Automated Upselling campaigns
	Trident Hotel	5-Star	Mobile Check-in and check-out, Touch less services for housekeeping
West Bengal	Swosti Premium	5-Star	Cloud Storage of all transactions, Service Rating automation
	The Oberoi Grand	Deluxe 5-Star	Admin Automation, In-room service automation
	ITC Royal Bengal	7-Star	Automated guest feedback management, Guest communication Automation, Cloud Services for guests
Jharkhand	The Lalit	5-Star	Automated Ambience System, Cloud based hotel apps
	Chanakya BNR Hotel	4-Star	Integrated payment processing, Automated email confirmation on check-in and check-out
Chhattisgarh	Hotel Babylon Inn	4-Star	Automated Appliance Management System for efficiency, Location Based Services
	Hotel Singhanian Sarovar Portico	4-Star	Hotel Marketing Automation, Cloud Service Automation

Source: Data Collected from Source by Author

2.2 Measures

Constructs of variables were considered from previous kinds of literature. A two-tier questionnaire was formed. The initial part was to know the demography, years of experience etc. The second part of the questionnaire was based on a 5-point Likert Scale to unearth our intended proposal (Satici et al., 2021).

3. DATA ANALYSIS AND RESULTS

3.1 Measurement Model

The scale constructs' psychometric qualities were the preliminary study's focus. This study focused a lot on the validity and reliability of the scales. In the CFA model, the first-order constructs are: Service Automation Practices (SA), Service VCs (VC), and GX are checked through lance of validity and reliability.

The CFA results supported a satisfactory goodness of fit, that means that the data fit to the model well ($\chi^2 = 84.538$, $df = 74$, $p = 0.00$, $\chi^2/df = 1.142$, $CFI = 0.997$, $TLI = 0.996$, $RMSEA = 0.013$). After confirming that the model fit was good, we investigated the standardized factor loadings. We found that in all cases, the items representing the constructs reported a loading larger than the suggested threshold of 0.50 (Hair et al., 2017).

In continuation of this study, examine the reliability of each construct through Cronbach's Alpha (threshold limit Cronbach's Alpha >0.70) (Hair et al., 2019) for internal consistency, Composite reliability (Threshold limit CR Value ≥ 0.70) is also used for internal consistency and convergence validity study use Average variance explained for measuring the degree of variation captured by a construct vs the measurement error level (Threshold limit AVE Value ≥ 0.50). Table -4 study shows all reliability and convergent indicators value satisfying the qualifying criteria for the measurement model (refer to Figure 2).

Table 4: Test of Reliability and Validity

Constructs	Items	Loadings/ Weights	Cronbach's Alpha	CR	AVE	MSV
Service Automation	SA5	0.801	0.841	0.843	0.518	0.261
	SA3	0.787				
	SA4	0.783				
	SA1	0.738				
	SA2	0.703				
Guest Experience	GX4	0.764	0.821	0.824	0.543	0.261
	GX3	0.762				
	GX1	0.739				
	GX5	0.727				
	GX2	0.718				
Value Creations	VC4	0.799	0.812	0.814	0.507	0.213
	VC2	0.790				
	VC3	0.789				
	VC1	0.690				

Source: Author

To check for discriminant validity, the researchers adopt the Criterion of both Fornell's and Larcker's (F & L) (Larcker & Fornell, 1981) and HTMT (Henseler et al., 2015; Janadari et al., 2016). As per the F&L criterion, the square root of AVEs for each construct (VC-0.737, GX-0.683, SA-0.720) must be greater than inter items correlation, which represents that no issues with discriminant validity (refer to Table 5 Part-A).

This study also checked and verified criteria for discriminant validity through HTMT recommended by Henseler et al. (2015). To meet this criterion for discriminant validity, the correlation between items within a construct and between constructs must be lower than the threshold limit of 0.90. Table 5 Part-B confirms that studies do not have any problem with discriminate validity, and all values are under the threshold limit.

Table 5: Discriminant Assessments

Part A: Discriminant Validity Assessment

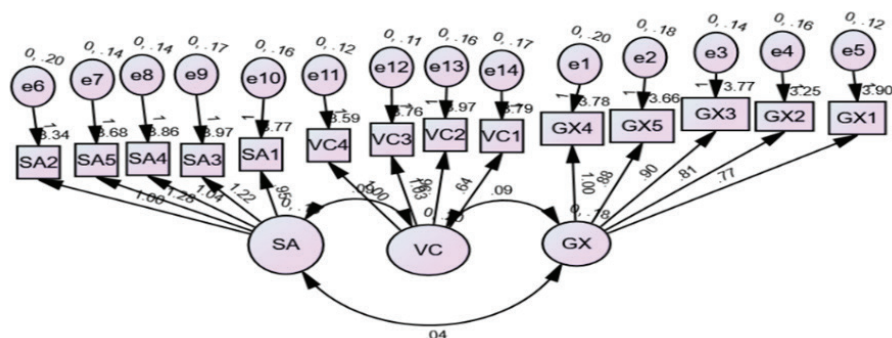
Constructs	VC	GX	SA
VC	0.737		
GX	0.462***	0.683	
SA	0.511***	0.262***	0.72

Part B: Discriminant Validity Assessment (HTMT Analysis)

Construct	VC	GX	SA
VC			
GX	0.464		
SA	0.517	0.269	

Source: Author

Figure 2: Measurement Model (CFA)



3.2 Hypothesis testing

Structured equation modelling (SEM) with maximum likelihood estimation was used to test the research hypotheses (H_1 to H_3). The study used a structural equation modelling approach: first-order SA served as the exogenous variable, VC as the mediator, and GX as the final endogenous variable. The model estimation reported that, the data fit to the model is excellent ($\chi^2 =$, $df =$, $p = 0.000$, $\chi^2/df = 1.142$, $CFI = 0.997$, $TLI = 0.921$, $SRMR = 0.021$, $RMSEA = 0.013$).

Table 6: Standardized Factor Loading: (Group number 1 - Default model)

			Estimate
VC1	←	VC	0.574
VC2	←	VC	0.741
VC3	←	VC	0.811
VC4	←	VC	0.799
GX1	←	GX	0.687
GX2	←	GX	0.658
GX3	←	GX	0.714
GX4	←	GX	0.694
SA5	←	SA	0.794
SA4	←	SA	0.732
SA3	←	SA	0.746
SA1	←	SA	0.669
SA2	←	SA	0.649
GX5	←	GX	0.663

Source: Author

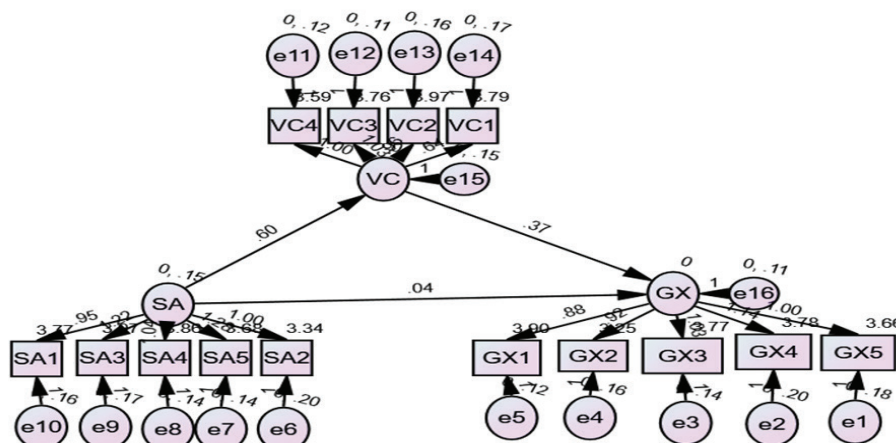
Table 7: Path Analysis

Hypothesis	Estimates /Stan. Beta	S.E.	CR/ t-Statistics	P	Label	Decision
SA→VC	0.602	0.054	11.213	***	a1	Supported
VC→GX	0.422	0.050	8.456	***	b1	Supported
SA→GX	0.040	0.054	0.749	0.454	c1	Not Significant

Source: Author

3.3 Structural Model (SEM)

Figure 3: Structural Model



Further, the study examined the path estimates and their statistical significance to test the proposed hypotheses. The path estimates reported that SA carry a positive and statistical significance on VC (SA→VC: $\beta = 0.602$, t -Statistics= 11.213 $p = 0.000$), VC also statistically influences GX (VC→GX $\beta = 0.422$, t -Statistics= 8.456 $p = 0.000$). Thus, the present study found support for H_1 and H_3 . Results also found that, SA is not significantly influences on GX (SA→GX: $\beta = 0.040$, t -Statistics= 0.749, $p = 0.454$), hence H_2 stands rejected. It indicates an indirect effect (Refer Table 7). Further, to check the indirect effect between an independent variable (IV) and a dependable variable (DV), it must have an insignificant effect ($p = 0.454$). The present study indicates a full mediation effect (Collier, 2020). According to this criterion present study (Refer Table-8) full mediation effect

in between SA→GX (SA→VC→GX [indirect effect] = 0.254, 95% Boot-LLCI =0.186, Boot-ULCI =0.336) (Collier, 2020). It implies that the role of creating a positive GX in the VC process is vital. As a result, the automation of services, through the creation of value, can positively and significantly impact the development of positive GX.

Table 8: **Mediation Effect**

Path	Total Effect	Direct Effect	Indirect Effect	Percentile Bootstrap at 95% level of confidence Interval (CI)		P	Decision
				Lower CI	Upper CI		
SA→VC→GX	0.294	0.040	0.254	0.186	0.336	0.000	Full Mediation Effect

Source: Author

4. DISCUSSION AND IMPLICATIONS

The SA and VC positively influencing GX. But SA has an indirect and significant impact on the GX with service VC playing a mediating role. There is no direct link between SA with GX. The study is indifferent to many other studies by Kadry et al. (2017), Lukanova & Ilieva (2019), Ukpabi et al. (2019), and Calvaresi et al. (2021), which indicate SA directly impacts GX. There are many theories on which the crises can be addressed to streamline the service team engaged in hotels, re-standardize their processes, offers greater visibility and have detailed analysis reports. The pandemic Covid-19 forced the service industry to re-organize or perish (Korede et al., 2021). For a sustainable hotel industry in the post-Covid-19 era, innovative service is one of the prime ways out (Spanaki et al., 2021). Another direction of papers was from Service Automation to Guest Experience (Rauf et al., 2022; Maier & Edwards, 2020; Ruel & Njoku, 2021). We also found papers concerning Value Creation to Guest Experience (Huy et al., 2019; Secchi et al., 2020, Chen et al. 2021, and Lee, S.A. et al. 2021). The findings indicate that there is ample proof of service automation has on the sustainability of the hotel Industry. Hotels are preferring contactless operations over human interactions (Mukherjee et al., 2021).

4.1 Theoretical Implications

The study is based on measures to address the sustainability issues of the hotel industry for crises arising out of the pandemic. Experts have suggested many directions to address the issue, viz., VC (Madden, 2020), green value (Hays & Ozretic-Došen, 2014), Effectiveness of Service Guarantees (Mohd Shahril & Abdul Aziz, 2022), and service innovation (Chandler et al., 2019) etc. Our study is based on service innovation that focuses on multiple actors aiding in resolving existing crises (Chandler et al. 2019). The service automation creates value resulting in an improved and added sustainable configuration of provisions required for customer interest for guest satisfaction. The AI-based service automation that adds to service innovation (Ab Rahman et al., 2022) creating value does not directly enhance customer satisfaction or GX, but the quantum of actual value created. So, VC has become a mediation between service automation and customer satisfaction.

4.2 Managerial Implications

Hotel Managers should delicately evaluate customer-friendly service automation practices based on AI and evaluate to what extent these can contribute to VC. User-friendly automation practices have the potential not only to reduce human interference but also cost reduction and better GX. Service automation parameters which can only create real value addition should be encouraged for deployment in hotels. The reviews or word of mouth (WOM) is bound to spread beyond boundaries and chances of repeat guests may be frequented. Managers must evaluate the additions or modifications of each automation practice which indirectly enhances the GX by collecting reviews before being employed and at the earliest possible. Techno-savvy or smart hotel staffs and managers will be required for the industry. Schools and institutions will have to implement such curricula in teaching the essence of each implementation of technology or service advantage to the traditional curricula and activities required to manage modern hotel and hospitalities industries.

CONCLUSION

The improvement in the standard of living, rise in socio-cultural engagements, and offers of relaxation tours for working classes etc. are market boosters expected to grow in the hotel business. The experiences of guests in a hotel are intangible characteristics which are more challenging than product marketing. To understand the value of addressing the crisis period and beyond, concepts are required to conceptualize the nature of the pandemic and its guidelines. Service innovations adhering to the guidelines of the pandemic are required in creating a sustainable hotel industry. Service Automation with the application of the latest technologies including AI will only add to VC. The Value so created can influence GX.

Limitations of the study

The study has its own limitations. The results need further clarification in other regions of India and if possible, abroad. The results should be tested on different segments of hotels or particular type of hotel segment could have been considered. There are inherent limitations with the period of data collection, the number of samples, time constraints of respondents etc. Limitations related to geography, technique and timing are omnipresent. The findings are specific to hotels of Eastern part of India, only covering few hotels. The results may be more or less different but the trend of outcome is expected to remain same.

Opportunities for future research

Similar studies can be considered in a particular segment of hotels, and other hospitality industries. Studies can be taken up on the operational excellence of service industries with the implementation of various interface technologies. Studies based on different theories such as critical theory, cognitive state theory, assemblage theory etc can be taken up to address the issues of the hotel industry during the pandemic period and beyond. Studies can also be taken up on service research such as value co-creation, and service ecosystems to help sustainability issues of the hotel industry. Sustainability of this industry is now, mostly technology based. Analysis of impact of each technical advancement/ implementation can be done to assess the suitability of each implementation.

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