

Role of Technology in Improving Workforce Management in the Tourism Enterprises

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Abstract

Nowadays, managing the workforce with the help of technology in organisations is crucial, especially in the service sector, such as tourism enterprises. The updated technology will benefit the firms by increasing profits, attracting more customers, and reducing working time more efficiently. Most service organisations adopt advanced technology to outdo their competitors' strategies. This paper, "Technological Interventions on workforce management in tourism enterprises", with a focus on significant breakthroughs that have transformed human resource practices of hospitality, was studied. Digital platforms, cloud-based solutions, and automation tools are transforming employee scheduling, payroll administration, and workforce analytics. This article aims to identify certain technologies that have improved worker operations and decision-making. The report uses case studies and empirical data analysis to demonstrate how technology promotes flexibility, employee engagement, and industry compliance. Furthermore, it highlights potential disadvantages such as staff technological resistance and initial setup expenses. The study indicates that successful technology implementation in workforce management enhances operational efficiency and ensures long-term sustainability in the tourism industry. Finally, the study demonstrates how technology has altered workforce management in tourism firms, such as the hospitality sector, and the skills and competencies employees need to use digital technologies with unprecedented precision, efficiency, and adaptability. A standardized five-point Likert scale questionnaire collects the study's data from 185 samples. We analyzed the acquired data using statistical techniques like Correlation, Regression, Chi-square, Principal Component Factor Analysis, and Conformity Factor Analysis.

INTRODUCTION

A technique or strategy known as "workforce management" (WFM) coordinates all human resources to complete the required work or tasks and achieve the organization's desired goal. The industry's unique needs shape the specific focus of workforce management. The tourism industry within the hospitality sector also employs this technique to boost productivity and efficiency. Thus, it involves efficiently managing staff to deliver high-quality service and meet customer expectations. The key aspects of workforce management in the accommodation industry include staff scheduling, time and attendance tracking, skill matching, training and development, demand forecasting, compliance management, employee engagement, and so on.

Keywords:

Workforce Management (WFM), Technological Intervention, Tourism Enterprises, Hospitality, Operational Efficiency, Long-term Sustainability.

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Technologically Enabled Workforce Management in the Accommodation Industry

The accommodation industry is proactively integrating digital tools and technologies into workforce management to improve and accelerate various elements of workforce operations. This is referred to as tech-enabled workforce management. This strategy aims to increase productivity, client delight, and operational efficacy.

Managing effectively and developing creative production is difficult, especially in a human-intensive market like the hotel sector today. This is due to a variety of factors, such as industry perceptions, attrition levels of manpower, education, competencies, upskill requirements, the work environment, and compensation. Now technology plays a crucial role in modern workforce management, bringing efficiency, accuracy, and flexibility to various processes. Here are some examples of how one industry applies technology to worker management.

Reservation and Booking Systems: Advanced reservation systems and booking platforms help hotels and restaurants predict demand and adjust workforce levels accordingly. This integration ensures that the team is ready to meet the expected flow of guests. Oracle Hospitality's "Opera Reservation System" is an example of an advanced reservation and booking system used in hotels. The advantages of digitalisation are a computerised registration system, real-time availability, integrated channel management, mobile booking, guest profile management, dynamic pricing and rate management, group booking management, inventory and yield management, integration with the property management system (PMS), reporting and analytics, and secure payment processing.

The accommodation industry widely uses the Opera Reservation System, which provides a comprehensive solution for managing reservations, enhancing guest experiences, and optimizing hotel revenue.

Square POS - It helps to retrieve the information on staffing levels during peak hours and optimise labor costs. Here are some key features and functionalities of Square POS:

- **Intuitive Interface:** Square POS provides a user-friendly and intuitive interface, making it simple for businesses to train their staff for efficient transactions quickly.

- **Hardware solutions:** Square provides various hardware solutions, such as Square Stand, Square Terminal, and Square Register, to meet the demands of businesses of all sizes.
- This feature enables **contactless payment** methods like Apple Pay and Google Pay, making it more convenient for merchants and customers.
- **Inventory management** enables firms to simply track inventory, customize items, and receive low-stock notifications.
- **Order administration:** This feature simplifies order administration by allowing for revisions, refunds, and order splitting/combination.
- **Sales Analytics:** It offers thorough reporting tools to improve business performance, identify trends, and make informed decisions.
- **Employee Management:** This component offers capabilities for managing staff workers, including user permissions, time monitoring, and sales performance tracking.
- Square POS helps to **process transactions offline**, providing business continuity during internet connectivity challenges.
- **Integration with other software:** Businesses can integrate their POS system with third-party apps and services like accounting and e-commerce platforms.
- Merchants can customize receipts with branding and send them to customers via email or text.

Small and medium-sized businesses across various industries widely use Square POS, which provides a versatile and user-friendly solution for managing point-of-sale transactions and related business operations.

Automated Scheduling: Software can analyze historical data, taking into account seasonal variations, events, and booking patterns. This enables the creation of efficient employee schedules aligned with anticipated demand.

Time and Attendance Tracking: Automated systems will help to accurately track the employees' working hours, breaks, and overtime. Integration with scheduling software ensures that staffing levels meet operational needs while staying compliant with labor regulations.

GRM: Helps know the guest's likes, dislikes, and behaviors. This information is valuable for tailoring staffing levels and services to meet the specific expectations of each guest.

Mobile Workforce Solutions: Mobile applications enable staff, especially those in housekeeping and maintenance, to access schedules, communicate with the team, and receive updates on guest requests in real time.

Training and Onboarding Platforms: Technology facilitates online training programs, ensuring the staff members receive the necessary training on customer service, safety protocols, and other essential skills.

Feedback and Review Platforms: Online feedback and review systems offer immediate information about customer satisfaction. This information can inform workforce

management strategies, helping businesses address areas that may impact guest experience.

IoT: Devices, such as controls and energy-efficient can contribute to cost savings. This will indirectly impact workforce management by influencing staffing levels in areas like housekeeping and maintenance.

Predictive Analytics: Leveraging data analytics and predictive modeling helps forecast demand for different services. This proactive approach allows businesses to adjust staffing levels in anticipation of busy periods or events.

The adoption of IT in workforce management within the hotel sector seeks to boost guest happiness, improve operational efficiency, and increase profitability.

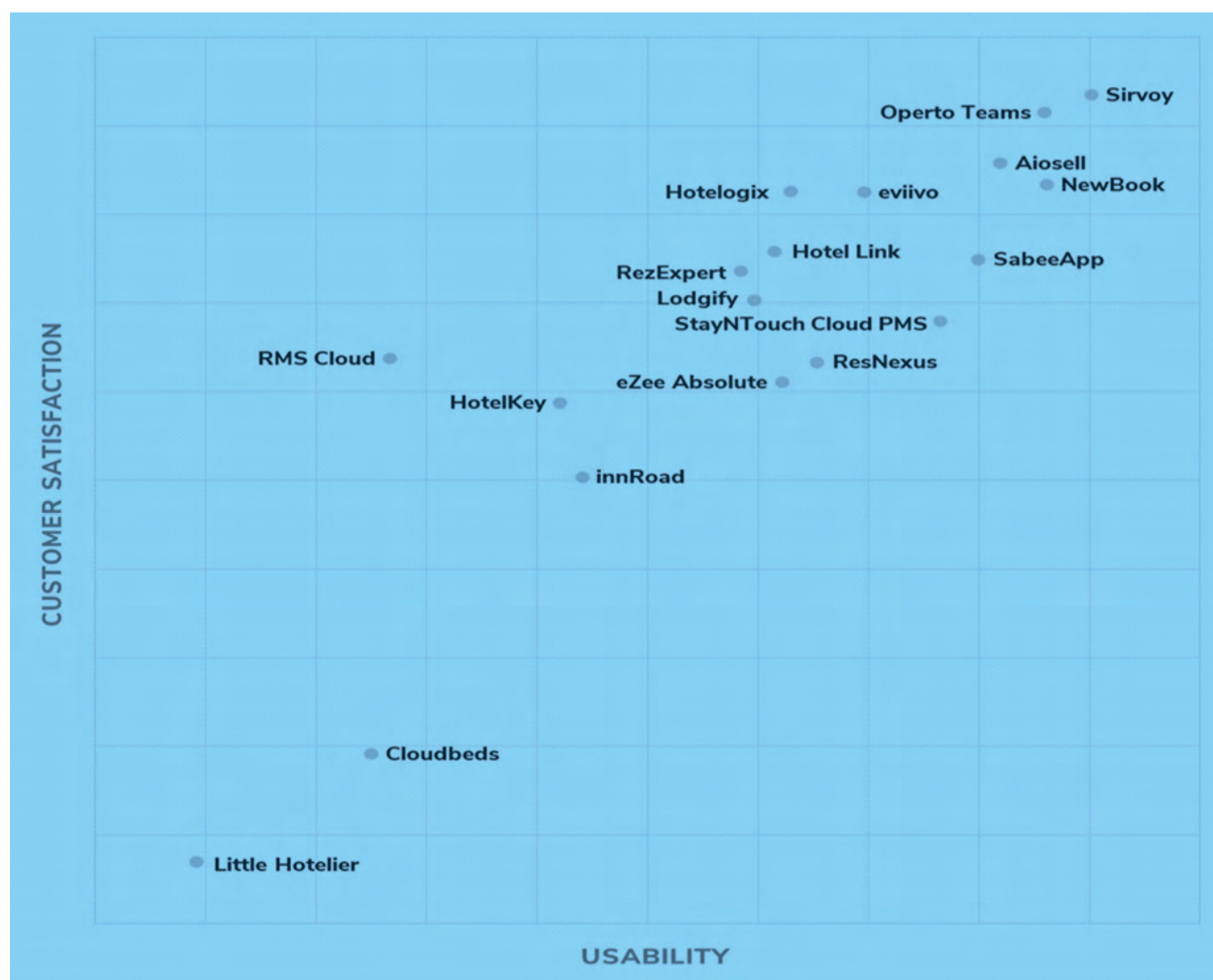


Figure 1: Best Hotel Management Software

Source: Internet



Figure 2: Top Hospitality Technology Trends in 2025

Source: Internet

SIGNIFICANCE OF THE STUDY

Nowadays, technology has permeated practically all industries, and everyone understands its impact on our daily lives and decision-making. The article explores how technology affects the organization and management of all types of workers in tourism enterprises, especially in the hospitality sector, and the advantages guests derive from using it. Additionally, it assesses how technology in workforce management has improved customer happiness and adaptation and how its use has affected strategic decision-making, operational effectiveness, and setting standards for innovations and competitions.

Specific Purposes of the Research

- Measure the effect of technology interventions on operational efficiency within the hospitality sector in tourism enterprises.
- The evaluation of technology adoption trends in WFM is based on the services and competencies of workforces in the accommodation industry.
- Explore how technology interventions in workforce management affect guest satisfaction and overall service quality.

HYPOTHESES

- H1 The implementation of technology significantly improves the operational efficiency of hospitality facilities.
- H2 Technology adoption trends in workforce management within the accommodation industry have a substantial correlation to the skills and competencies of employees.
- H3 The hospitality industry has found that the implementation of technology in workforce management significantly improves guest satisfaction and overall service quality.

LITERATURE REVIEW

The hospitality industry has always been at the forefront of implementing new technologies to improve client experience and streamline operations (Buhalis and Cheng, 2020). Chatbots and virtual assistants have recently added a new level of automation and personalisation to hospitality services (Rajan et al., 2022). The hospitality business has long explored new technology to enhance tourist experiences and streamline operations (Xu et al., 2019). Facial recognition and access control systems have emerged as promising applications in

this industry, attracting attention for their ability to increase security, operational efficiency, and visitor personalisation (Dijmărescu et al., 2022).

The Current advances in personnel supply supervision and organisational environment have primarily been determined by technology, necessitating the need for tech-savvy human resource managers. The pursuit of effective and efficient staff management has resulted in an embrace of digitalisation (Berber et al., 2018). It has a significant impact on various stages of a typical human resource process, such as recruitment, selection, performance appraisal, demand forecasting, supply forecasting, job description, job specification, job analysis, job evaluation, training and development, career planning and development, and succession planning (Tooranloo et al., 2017).

The rise of the Internet opened up a plethora of new recruitment opportunities. Many businesses started using the internet to communicate their employer brand and attract potential employees. According to Mičík and Mičudová (2018), the Internet is a top source of job information for Generation Y professionals nowadays.

The literature on the impacts of smart technology on the hospitality and tourism industry has often argued that technological advancements will continue to alter the business phases of the industry (Buhalis & Amaranggana, 2015; Gretzel, Sigala, Xiang & Koo, 2015; Neuhofer, Buhalis & Ladkin, 2015). Other researchers have also explored the prospects and challenges of some IR 4.0 technologies for the hospitality industry (Balasubramanian & Ragavan, 2019; Ivanov & Webster, 2017; Wang, Li, Zhen & Zhang, 2016).

Due to the advent of IR 4.0, the widespread implementation of information technology in the tourism and hotel industry, including the incorporation of internet-based tools, global booking systems, and worldwide distribution networks, facilitated the establishment and evolution of "e-tourism" (Buhalis & Amaraggana, 2015).

The term encompasses all potential integration methods and contents between HRM and information technologies, to generate value for employees and management both within and across organizations. (Bondarouk and Ruël, 2009:07)

The hotel and tourist sectors are utilising advanced technology, including artificial intelligence and robotics, to improve consumer satisfaction and enjoyment. Smart tools for customer service have transformed these technological

advancements, enhancing the customer experience (Goel et al., 2022). Train staff to use and interact with AI systems; foster a collaborative culture between AI and human staff. (Fan, Gao, & Han, 2022). Implement robust data privacy and security measures to protect guest information and maintain trust in AI systems. (Rosete et al., 2020).

Use AI to analyse guest data and preferences, and then use this information to personalize guest experiences while balancing automation and human interaction. (Busulwa et al., 2020). Offer opportunities for human interaction throughout the guest journey, such as personalized concierge services or face-to-face check-in processes. (Fan, Gao, & Han, 2022).

Successful implementation requires addressing data privacy and security concerns, striking the right balance between automation and human interaction, and investing in employee training and development (Sunny Vinnakota et al. 2023).

RESEARCH GAP

The tourism and hospitality sectors are experiencing significant technological advancements, including various applications, access control systems, which are being used to improve customer satisfaction and operational effectiveness. These technologies are also impacting human resource management (HRM), where digital technologies are changing workforce planning, performance evaluation, and recruitment. However, a substantial knowledge gap exists about the well-designed know-how and internet tools are integrated into HRM procedures, particularly in the hospitality sector, especially in light of Industry 4.0 (IR 4.0). The internal application of these technologies, particularly in managing, training, and retaining hospitality employees in an AI-augmented work environment, has received less attention from studies. Empirical research is scarce on how these technologies impact employee roles, training requirements, and HR strategies, and little is known about how AI-driven advancements in the guest experience can be integrated with organizational culture and employee engagement in the hotel industry. Most current literature focuses on guest-centric innovations, leaving employee-centric technology adoption and its HRM consequences understudied. This research objective is to close these gaps by investigating how AI and smart technologies are being incorporated into HRM practices, the implications for workforce development, and the strategies required to ensure a safe, cooperative, and balanced human-AI work environment.

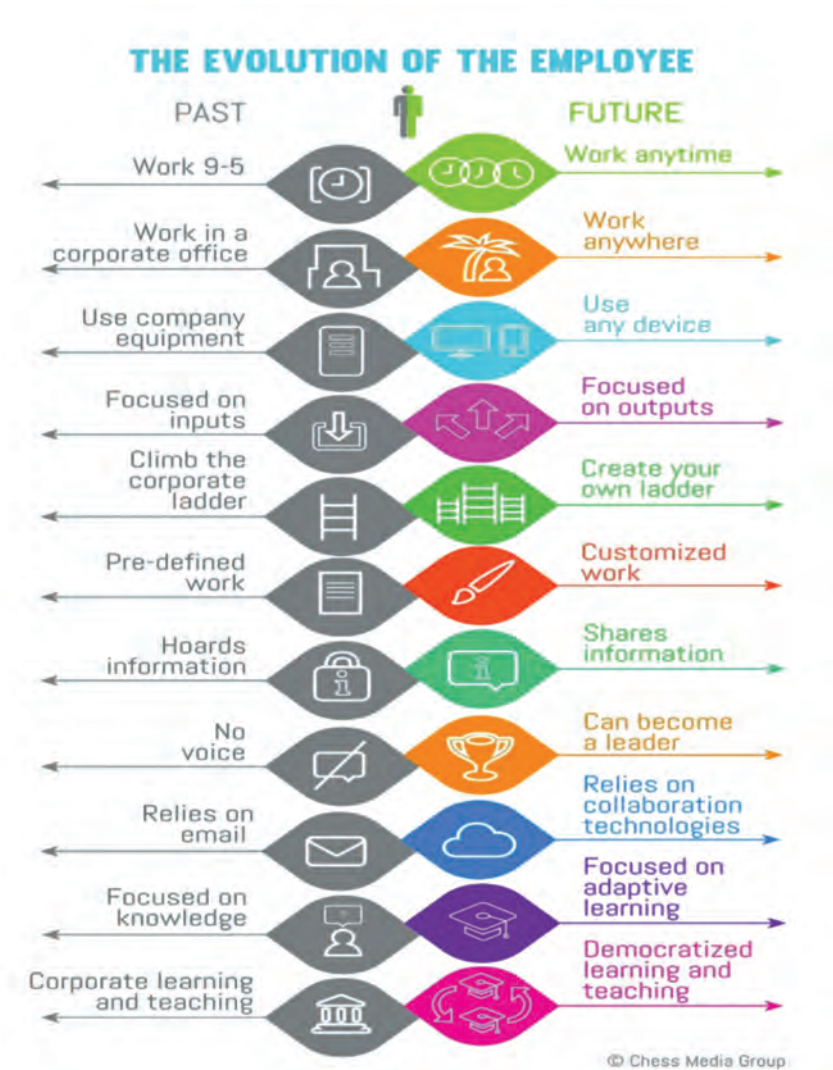


Figure 3: Technological Evolution of the Employee Source: Internet (www.forbes.com)

RESEARCH METHODOLOGY

This study surveyed employees in the hospitality industry, specifically those based in Kerala and employed for over a year. The study selected 185 employees from various segments of the sector to represent the present state of the hospitality business in India. The data collection lasted from January to May 2025. We collected a total of 175 valid Likert scale rating questions through Google Forms, with a response rate of 95%. We distributed four questionnaires, one for each of the three statements from the study's three objectives, along with the demographic questions. Ultimately, the researcher collected all the completed surveys and conducted various analyses using tools and techniques such as the coefficient of correlation, chi-square test, and ANOVA. They also employed the structural equation model to understand the "role" and

intervention of "technology" in workforce management within the accommodation industry.

STATISTICAL ANALYSIS

In SPSS 20, we processed and analysed the information received from questionnaires using 'descriptive statistics', such as frequencies and percentages, to evaluate the circumstantial profiles of defendants and the role and intervention of technology in workforce management in the hospitality sector. We also tested the hypotheses using the regression model (ANOVA) and chi-square methods. We used factor analysis (principal component) and confirmatory factor analysis (CFA) with SPSS AMOS 20 to confirm the accuracy and dependability of the measurements, respectively.

Reliability and Validity

Dependability is the measure of the core reliability of the paradigms in the study. A reliable hypothesis is one with an alpha (α) value more than 0.70; paradigm consistency was evaluated using "Cronbach's alpha". The results revealed that the operational efficiency measure with 5 items ($\alpha = .832$) and the skills and competencies scale with 4 items ($\alpha = .745$) were reliable. Similarly, the satisfaction and overall service quality scale with 5 items was also found to be reliable ($\alpha = .782$). Table 1 summarizes the reliable results.

"In this scrutiny, we confirmed the legitimacy of the study's findings by reviewing the works and considering the ideas of field specialists. We carefully reviewed each statement on the questionnaire, drawing on expert opinions and a review of the literature for guidance. We found a connection between every item's content and the study's objectives.

Table 1: Reliability statistics

Constructs	Number of Items	Cronbach's alpha
OE	5	.832
SC	4	.745
SSQ	5	.782

Source: Primary data

RESULTS AND THEORY TESTING

Demographic Outline

The outcomes of the expressive investigation in Table 2 disclose that out of the 175 respondents, 98 (56%) were males, and the remaining 77 (44%) were females. About the respondents' age group, 67 defendants were between 20 and 30 years, representing 38.3%, and the subsequent 55 were aged between 31 and 40 years, representing 31.4%. There were 46 respondents, or 23.6%, in the age group of 41–50 years. Seven respondents, or 4% of the total, were over 50 years old. Respondents' experience: 31% have less than five years of experience, accounting for 54 individuals. 46% of respondents, or 80 individuals, have experience ranging from 6 to 10 years. 28 respondents (16.1%) have experienced between 11 and 15 years. Ten respondents, or 5.7%, have experience ranging from 16 to 20 years. Three respondents have over 21 years of experience, accounting for 1.3 percent. Another variable is the position of respondents in the hotel. Of the 92 respondents, 41 (23%) are subordinates, 52.9% are married, and 24.1% hold

managerial positions within the organization. This study uses the educational background of respondents as the final demographic variable, finding that 11.4% of respondents, or 20 in total, have an SSLC. 73 respondents (41.7%) are diploma holders. 38.9% of the respondents, or 68 individuals, qualified for a degree. 8% of respondents, or 14 individuals, possess a master's degree.

Table 2: Demographic Outline of respondents

Demographic Variables	Class	Frequency	Percentage
Gender	Male	98	56
	Female	77	44
Age	20 to 30	67	38.3
	31 to 40	55	31.4
	41 to 50	46	26.3
	Above 50	7	4.0
Experience	below 5 years	54	31
	6 to 10	80	46
	11 to 15	28	16.1
	16 to 20	10	5.7
	Above 20 Years	3	1.3
Position	Subordinate	41	23
	Supervisory	92	52.9
	Managerial	42	24.1
Qualification	SSLC	20	11.4
	Diploma	73	41.7
	Degree	68	38.9
	Masters	14	8

Source: Primary data

DESCRIPTIVE STATISTICS

This descriptive statistics analysis will shed light on the three primary goal components: operational efficiency, skills and competencies, satisfaction, and the overall service quality resulting from technology's intervention in the hospitality industry. Each of these components comprises 12 subfactors. Operational efficiency includes speed and efficiency,

customer service and satisfaction, communication and collaboration, and accuracy and precision. The group's highest mean, 3.7371, pertains to accuracy and precision. The standard deviation of 1.10876 reflects moderate to high levels of variability in the data. The second factor is the skills and competencies, which include tech-savvy, analytical skills, continuous learning, and data security components.

Table 3: Descriptive Data of the Variables

Variables	N	Mean	Standard Deviation
OE	175	3.2743	1.03622
SE	175	3.2514	0.85412
CS	175	3.4343	1.01990
CC	175	3.2514	1.09055
AP	175	3.7371	1.10876
SC	175	3.5200	1.11850
TS	175	3.4171	1.06822
AS	175	3.5257	0.92113
CL	175	3.4971	1.15407
DS	175	3.5029	1.04976
SSQ	175	3.7429	0.80740
ASS	175	3.6857	0.77946
FAP	175	3.7486	0.94970
MST	175	3.5657	0.86101
ICS	175	3.9029	1.03765
Valid N (listwise)	175		

Source: Primary data

In these statistics, the highest mean is 3.5257 for analytical skills, indicating more variability in responses among respondents. The third factor is satisfaction, and overall service quality has four components: they are automated scheduling systems, feedback and analytics platforms, mobile and self-service technologies, and finally, the integrated CRM system with the highest mean of 3.9029. All analyses are based on a valid sample of 175 cases, indicating a consistent dataset without missing values.

In essence, the descriptive statistics provide a snapshot of the workforce's perceptions regarding different aspects of the work environment. The summary suggests that while there is a general sense of moderate importance or satisfaction across these factors, some specific areas, such as SSQ, FAP, and ICS, may be of relatively higher significance.

TESTING OF HYPOTHESIS

Hypothesis Test 1

Table 4: (H1) The implementation of technology significantly improves the operational efficiency of hospitality facilities.

ANOVA ^a					
Model	“Sum of Squares”	df	Mean Square	F	Sig.
Regression	124.977	4	31.244	85.866	.000 ^b
Residual	61.858	170	.364		
Total	186.834	174			

a. Dependent Variable: OE
b. Predictors: (Constant), AP, CS, SE, CC

Source: Primary data

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and self-service technologies, and finally, the integrated CRM system with the highest mean of 3.9029. All analyses are based on a valid sample of 175 cases, indicating a consistent dataset without missing values.

Table 5: Model Summary

Model Summary ^b										
					Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.818 ^a	.669	.661	.60322	.669	85.866	4	170	.000	.722

a. Predictors: (Constant), AP, CS, SE, CC
b. Dependent Variable: OE

Source: Primary data

The combination of predictors (SE, CS, CC, AP) in the model significantly contributes to explaining the variance in Operational Efficiency (OE). Support for Hypothesis: the F Change statistic is significant (p-value < 0.05), signifying that at slightest one of the forecasters in the model is related with a statistically substantial change in OE.

The analysis supports the hypothesis that each predictor (SE, CS, CC, AP) contributes significantly to explaining the variance in operational efficiency. Additionally, the combination of these predictors in the model is collectively associated with a statistically significant change in operational efficiency. The absence of significant autocorrelation in the residuals enhances the reliability of the model.

Hypothesis Test 2

Table 6: The adoption trends of H2 technology in workforce management within the hospitality industry significantly correlate with the skills and competencies of employees.

Test Statistics					
	SC	TS	AS	CL	DS
Chi-Square	92.857 ^a	51.994 ^b	32.109 ^b	50.343 ^a	65.429 ^a
df	4	3	3	4	4
Asymp. Sig.	.000	.000	.000	.000	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 35.0.
b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 43.8.

Source: Primary data

All predictors (TS, AS, CL, DS) and the dependent variable (SC) show highly substantial chi-square values ($p < 0.05$), representing a significant association. The test reports that no cells have expected frequencies less than 5%, indicating a robust sample size and reliability of the outcomes. The theory

test shows that there is a strong link between being tech-savvy, having analytical skills, learning new things all the time, data security, and having the right skills and competencies. This reinforces the notion that these predictors correlate with the appropriate level of skills and competencies in this context.

Hypothesis Test 3

Table 7: H3 The hospitality industry has found that implementing technology in workforce management significantly improves guest satisfaction and overall service quality.

Test Statistics					
	SSQ	ASS	FAP	MST	ICS
Chi-Square	59.857 ^a	76.680 ^a	23.514 ^a	47.606 ^a	29.549 ^a
df	3	3	3	3	3
Asymp. Sig.	0.000	0.000	0.000	0.000	0.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 43.8.					

Source: Primary data

The hypothesis suggests that the implementation of technology in workforce management has a significant positive impact on guest gratification and overall service value in the accommodation sector. All components (SSQ, ASS, FAP, MST, ICS) show highly substantial “chi-square” values ($p < 0.05$), representing a substantial association between the implementation of technology in workforce management and guest satisfaction, as well as overall service quality. The study strongly supports the idea that using technology, like automated scheduling systems, feedback and analytics platforms, mobile and self-service technologies, and integrated CRM systems in workforce management, greatly improves

guest gratification and 'service quality' in the accommodation sector as a whole. The findings highlight the importance of 'technology-driven' strategies in enhancing service delivery and guest experience within the hospitality sector.

Factor Analysis

Principle Component Factor Analysis

The study employed principal factor analysis to analyse 15 factors. “Kaiser-Meyer-Olkin” and “Bartlett's test” of sphericity were principally considered to prepare the dataset for this analysis at different stages of the test exercise.

Table 8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.670
Approx. Chi-Square	1247.000
df	105
Sig.	0.000

Source: Primary data

Before using this analysis in statistics, we used “Bartlett's Test of Sphericity” and the “Kaiser-Meyer-Olkin” Measure of sample Suitability (KMO) to ensure the samples were large enough for the analysis. Hutcheson (1999) states that the KMO value of 0.670 indicates the sample adequacy level for the

current analysis is moderate. The value was significantly higher than the permissible threshold of 0.5. The results of “Bartlett's test” for data sphericity, which is less than 0.05, showed a value of 0.000, indicating that the data was valid for dimension analysis.

TABLE 9: Total Variance Explained

	“Initial Eigenvalues”			“Extraction Sums of Squared Loadings”			“Rotation Sums of Squared Loadings”		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.708	24.723	24.723	3.708	24.723	24.723	3.305	22.034	22.034
2	2.817	18.782	43.504	2.817	18.782	43.504	2.638	17.590	39.624
3	2.132	14.211	57.715	2.132	14.211	57.715	2.312	15.415	55.039
4	1.524	10.163	67.878	1.524	10.163	67.878	1.926	12.839	67.878
5	.844	5.627	73.505						
6	.786	5.237	78.742						
7	.643	4.289	83.031						
8	.591	3.938	86.969						
9	.461	3.074	90.043						
10	.394	2.626	92.668						
11	.315	2.102	94.770						
12	.293	1.950	96.720						
13	.193	1.284	98.004						
14	.174	1.159	99.163						
15	.126	0.837	100.000						

Extraction Method: Principal Component Analysis.

We grouped the variables using varimax and principal component analysis. We used 12 indicators to identify four dimensions that accounted for 67.878 percent of the variance and had eigenvalues greater than 1.0, as indicated in the data. The findings show how technology interferes with a wide range of criteria, such as operational efficiency, skills and competencies, satisfaction, and overall service quality. The technology integration across these dimensions highlights its revolutionary impact in altering operating dynamics, developing skills, and, eventually, boosting customer happiness and service quality. Continuous adaptation to emerging technology is vital for organisations to remain competitive and provide optimal performance in all areas. Technology interventions across these components not only improve operational efficiency but also contribute to the development of a tech-savvy staff, improved skills, and increased overall customer happiness and service quality. Strategic technology integration is critical for organisations seeking to remain competitive and achieve optimal performance across all areas.

Conformity Factor Analysis (CFA)

This analysis aims to observe the hypothesized dimensions, resulting in a more in-depth understanding of the relevant elements connected with the roles and interventions of technology in workforce management (WFM) within the hospitality sector. We developed the model to test the three dimensions of operational efficiency, satisfaction, overall service quality, and skills and competencies with twelve variables. In this structural equation modeling (SEM) analysis, we examined the relationships among key constructs of the hospitality sector based on technology influences in WFM. The evaluations, standard errors, ratios, and p-values provide insights into the strength and significance of these associations. A robust positive association exists among communication, collaboration, and operational efficiency, with a significant critical ratio of 6.236. The technology's operational efficiency significantly affects customer service and satisfaction, as evidenced by a critical ratio of 5.406. The relationship between speed and efficiency and operational efficiency is robust, with a significant critical ratio of 6.214. A significant critical ratio of 7.786 supports the

strong positive influence of system quality on mobile and self-service technologies. System quality significantly affects the feedback and analytical platform, with a critical ratio of 8.310. A significant critical ratio of 4.983 supports the positive impact of system quality on the automated scheduling system. A significant critical ratio of 4.983 approves the constructive influence of classification quality on the

automatic scheduling system. The crucial ratio of 5.440 suggests a strong positive association between security competency and ongoing learning. The crucial ratio of 4.834 indicates that security competency has a substantial impact on analytical skills. A robust positive relationship exists between security competency and tech savviness, supported by a significant critical ratio of 5.450.

Table 10: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	39	171.271	51	0.000	3.358

Table 11: Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Accuracy and Precision	<---	OE	1.000				
Communication and Collaboration	<---	OE	1.937	.311	6.236	***	par_1
Customer Service and Satisfaction	<---	OE	1.180	.218	5.406	***	par_2
Speed and Efficiency	<---	OE	1.378	.222	6.214	***	par_3
Integrated CRM System	<---	SSQ	1.000				
Mobile and Self-Service Technologies	<---	SSQ	.706	.091	7.786	***	par_4
Feedback and Analytical Platform	<---	SSQ	.875	.105	8.310	***	par_5
Automated Scheduling System	<---	SSQ	.400	.080	4.983	***	par_6
Data Security	<---	SC	1.000				
Continuous Learning	<---	SC	2.166	.398	5.440	***	par_7
Analytical Skills	<---	SC	1.045	.216	4.834	***	par_8
Tech Savviness	<---	SC	1.573	.289	5.450	***	par_9

Table 12: Covariances (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SC	< -- >	OE	0.041	.023	1.763	0.078	par_10
SC	< -- >	SSQ	0.065	.038	1.721	0.085	par_11
OE	< -- >	SSQ	0.120	.044	2.761	0.006	par_12

Table 13 "Factor Score Weights" (Group number 1 - Default model)

	TS	AS	CS	DS	ASS	FAP	MST	ICS	SE	CS	CC	AP
SSQ	0.004	0.003	0.013	0.002	0.105	0.297	0.228	0.325	0.015	0.004	0.027	0.003
OE	0.001	0.001	0.004	0.001	0.002	0.005	0.004	0.006	0.170	0.048	0.296	0.028
SC	0.092	0.059	0.278	0.038	0.001	0.004	0.003	0.004	0.003	0.001	0.006	0.001

Source: Primary data

In this research, we used confirmatory factor analysis (CFA) to look at the links between essential organizational competencies. The correlation matrix reveals intriguing patterns and relationships among distinct constructs. Feedback and analytical platforms have a strong positive link with mobile and self-service technologies (0.297) and integrated CRM systems (0.325). This shows that feedback methods might be integrated with mobile and self-service technologies, as well as CRM systems, emphasizing the significance of a comprehensive feedback and analytics platform. Operational efficiency has significant positive associations with speed, efficiency, accuracy, and precision (0.170 and 0.296). Organisations that prioritise speed and precision may find these constructs to be mutually reinforcing. Continuous learning has a favorable link with analytical skills (0.013) and customer service and satisfaction (0.027). This result shows that focusing on continuous learning efforts could help increase analytical skills and customer satisfaction. Data security correlates favorably with communication and collaboration (0.038), implying a possible link between data security measures and effective communication tactics. The skill and competency construct highly connects with other constructs, implying multidimensional interactions that merit additional investigation.

RESULT AND DISCUSSION

This study seeks to analyse the relevance and interventions of “technology” in tourism entrepreneurs, especially in the accommodation sector, focusing on operational efficiency, satisfaction and service quality, and skills and abilities. A “Structural Equation Model” (SEM) was used to measure variables such as accuracy, precision, communication, collaboration, customer satisfaction, speed and efficiency, integrated CRM systems, mobile and self-service technologies, feedback and analytical platforms, automated scheduling systems, data security, continuous learning, analytical skills, and tech savvy. The results deliver tactical suggestions for practice and policy by highlighting the importance of technological characteristics in streamlining service operations and reducing operational redundancies.

The Feedback and Analytical Platform (FAP) concept is identified as a key element that interacts well with CRM systems and mobile devices, encouraging creativity and ongoing learning among employees. Accuracy and Precision (AP) and Speed and Efficiency (SE) demonstrate a significant synergy, emphasizing the importance of

technology in streamlining service operations and reducing operational redundancies. Data security (DS) and communication and collaboration (CC) emphasize the need to protect digital infrastructure while fostering effective internal communication.

However, there is still a substantial knowledge gap about how smart “technologies” and artificial intelligence tools are integrated into HRM processes, particularly in the accommodation sector, especially in light of Industry 4.0 (IR 4.0). There is an absence of experimental research on how these technologies influence employee roles, training requirements, and HR strategies, and little is known about how AI-driven advancements in the client experience can be integrated with organizational culture and employee engagement in the hotel sector.

The research purpose is to close these 'gaps' by investigating in what way AI and smart technologies are being incorporated into HRM procedures in the hotel industry, their effects on workforce development, and the strategies required to ensure a safe, cooperative, and balanced human-AI work environment.

CONCLUSION & RECOMMENDATION FOR FUTURE RESEARCH

Furthermore, the usage of automated scheduling systems, feedback and analytics platforms, mobile and self-service technologies, and integrated CRM systems adds to higher levels of guest gratification and overall service excellence. The results suggest that a complete examination of the role and intervention of 'technology' in WFM in the tourism and accommodation sector has the potential to improve the sector's efficiency. This involves enhancing the customer experience and operational effectiveness through speed and efficiency, customer service and satisfaction, communication and collaboration, and accuracy and precision, among other elements. Even if technology is advancing faster than the thoughts of individuals in various disciplines, even guests in the sector who are also concerned with the innovations are unaware of how they are used. Employees in this business, particularly those over the age of 35, require support in improving their abilities in new technological changes so that they may effectively manage changes and technological interventions in labor management. Despite significant progress in recent years, future research should focus on enhancing the training and familiarization of workers with

new technologies such as Little Hotelier, Cloud Beds, RMS Cloud, Hotel Key, Sabee App, and New Book. The study should go beyond the existing focus on guest communication, analytics, and upkeep to investigate new uses. Technology, sustainable practices, and the integration of various technology applications in areas such as automated scheduling, E-CRM, workforce dynamics, mobile solutions, feedback, review platforms, IoT, predictive analysis, inventory management, and sales analysis are suitable ways to enhance the work environment in the hospitality sector.

To strike a balance between data-driven personalization and privacy concerns, to make technological tools more useful and accessible, and to learn about how AI tools will affect training and the workforce as they become more prevalent in the industry, it is critical to address issues with data quality, a lack of analytical skills, and the associated costs.

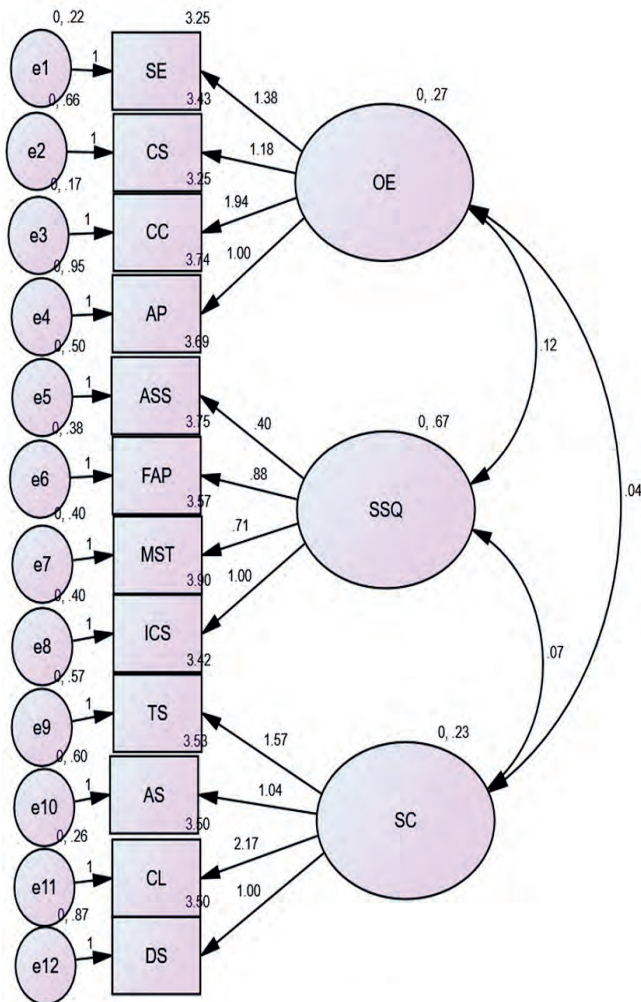


Figure 4: Intervention of Technology in WFM on Hospitality Sector - Confirmatory factor analysis

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