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Training Hours, Revenue Growth, and Turnover: Causal Panel Evidence from Kochi Luxury Hotels

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ABSTRACT

The study proposes and empirically validates the Seasonal Training Displacement Effect (STDE), expanding upon Human Capital Theory in the context of structurally seasonal labour markets. Utilizing a two-way fixed-effects panel data design from 10 five-star hotels in Kochi, India (160 hotel-quarter observations from Q1 2020–Q4 2023), the authors provide empirical support for the causal link between archival training hours per employee and financial performance. Findings indicate that for every 10 additional training hours per employee in a quarter, RevPAR increases by ₹1,886 (β = 188.57, $p < 0.001$), average daily rate (ADR) increases by ₹1,826 (β = 182.55, $p < 0.001$), and turnover decreases by 6.75 percentage points ($\beta = -0.675$, $p < 0.001$). Recalculation of the sequential mediation pathway found a significant indirect effect (IE = 25.45, p = 0.005), indicating partial mediation through employee competency, service quality, and guest satisfaction that accounts for approximately 13.5% of the total training–RevPAR relationship, with the majority of the effect operating through a direct manager-mediated training–revenue pathway. Distributed lag modelling suggests an optimal payback window of one quarter, while Granger causality testing confirmed unidirectional causation. Evidence supports the STDE moderation mechanism: a negative moderating effect of monsoon-season training is significantly greater for hotels experiencing higher attrition during the monsoon quarter (H8: $\beta = -47.83$, p = 0.005). A first in Q1 hospitality research, a departmental training return-on-investment analysis revealed the highest return from front office training at 559.5%, compared to 208.6% for back office training, well exceeding the 45–200% benchmark commonly reported for the service sector.

Keywords: *Causal inference; Fixed-effects panel; Human Capital Theory; Kerala; RevPAR; Seasonal Training Displacement Effect.*

1. INTRODUCTION

One of the most important investments by a luxury hotel in its human capital is to provide training for employees. Competitive advantage in the luxury hospitality industry is derived almost entirely from the quality of service that staff provide. Staff service quality is determined by three factors: the competency level of the staff, their contextual knowledge, and the hospitality values of their culture. For this reason, determining whether a hotel's investment in training employee(s) represents a positive return on investment for the hotel owner is one of the key strategic questions facing hotel GMs, HR directors and hotel owners today (Karatepe, 2013; Lievens, 2011; Tanwar & Prasad, 2016).

Although over thirty years of research exist surrounding hospitality HRM, a definitive answer to this question still does not exist in an empirical causal manner. A systematic literature review of the top 10 hospitality journals between the years 2015 and 2025 demonstrates several ongoing patterns: a large majority of studies use a cross-sectional design (Waqanimaravu and Arasanmi, 2020; Garavan et al.,

2021); most studies employ the use of employee perception surveys for measurement (Hernandez-Perlines et al., 2016; 2017; Cho et al., 2006); most studies examine employee attitudinal outcomes instead of financial KPIs (Karatepe, 2013; Al-Dhaafri et al., 2016); and nearly all studies are conducted within Western, East Asian, or Middle Eastern culture contexts (Assaf and Josiassen, 2012; Garavan et al., 2021). This research is motivated by a total of seven specific and documented deficiencies.

Five research questions guide the study:

RQ1: Do employee training hours causally influence RevPAR, ADR, and employee turnover in Kochi luxury hotels, and at what magnitude?

RQ2: What is the optimal temporal lag between training investment and peak RevPAR return, and does training Granger-cause performance rather than the reverse?

RQ3: Does the training–RevPAR relationship operate through a sequential mediating chain of employee competency, service quality, and guest satisfaction?

RQ4: How does Training Return on Investment vary across operational departments, and what boundary conditions moderate the training–performance relationship?

RQ5: Is there evidence of a seasonal training investment dissipation cycle in Kochi luxury hotels, and does its magnitude vary with monsoon-quarter attrition rates?

Kochi, Kerala, is an empirically unexplored and theoretically significant context. Kochi is one of the fastest-growing luxury markets in India (Ministry of Tourism, Government of India, 2024) and has tripartite seasonality, MICE dependency and Ayurvedic dependency, as well as structural mobility of workers in the market. These characteristics produce the most theorised novel contribution of this study - STDE - theorised and empirically tested here as a new construct that extends Human Capital Theory (HCT) into structurally seasonal labour markets. Data were collected from Q1 2020 through Q4 2023, spanning the post-pandemic recovery period and the full tripartite seasonal period across four complete years.

The study makes five contributions: (1) among the first panel-data causal studies of objective training hours with RevPAR and ADR via within-hotel fixed-effects identification via Oster $\delta > 4.5$ confirms robustness; (2) first empirical temporal specification of the payback window of training via distributed lag modelling; (3) Theorisation and empirical testing of the STDE as a novel extension of HCT at the mechanism level; (4) Introduction of departmental T-ROI as a new hospitality research Q1 benchmark against service industry norms; and (5) First archival data causal evidence for training investment in luxury Indian hospitality. The study is purposely locked in on the Kochi 5-star market, enabling causal identification at the expense of immediate generalisability as previously discussed under limitations.

2. LITERATURE REVIEW AND RESEARCH GAPS

2.1 Theoretical Foundations

2.1.1 Human Capital Theory

The Human Capital Theory (HCT) developed by Becker (1964) identifies the relationships between training and returns via improved productivity from firm-specific training, providing switching costs which lead to anticipated retention. Evidence from luxury hospitality indicates that firm-specific service competencies reduce employees' mobility between different properties (Cho et al., 2006; Tanwar & Prasad, 2016). Though HCT has not been fully tested beyond specific non-continuous hours of training or longitudinal data, this research will test the HCT investment-return prediction as operationalised via

archival training hours and financial KPIs, while also identifying the Seasonal Training Displacement Effect (STDE) as a boundary condition in which structural periodic attrition systematically leads to failures in HCT predictive retention (theoretical extension to date).

2.1.2 Resource-Based View

The RBV describes trained human capital as a VRIN resource that creates sustained competitive advantage (Barney, 1991). According to Kim and Brymer (2011), service competency depth is the main way that luxury hospitality can differentiate itself from competitors. Bharwani and Jauhari (2013) take this idea into India, where they assert that systematic training is essential in order to turn hospitality graduates into firm-specific advantages. This current research will test the performance prediction of the RBV by comparing two hotels (panels) within a hotel and adjusting for constant hotel characteristics.

2.1.3 Service-Profit Chain

The causal process of Heskett et al. (2008) from training to capability to service quality to loyalty and finally to revenue has been widely quoted (Chi & Gursoy, 2009; Hwang & Chi, 2005) but is historically under-tested with data that are not approximate (Garavan et al., 2021). This research project tests the entire causal chain via PLS-SEM. Results show that the individual path links and the overall indirect pathway are both significant, indicating partial mediation; the majority of the effect nonetheless operates through a direct manager-mediated training-to-revenue pathway, the dominant pathway in Indian luxury hospitality, which encourages contextually sensitive adaptation.

2.2 Training and Performance: Q1 Hospitality Evidence

Although previous researchers have shown there to be a positive correlation between the amount of training received by hotel employees and overall hotel performance, predominantly self-reported or cross-sectional data have resulted in errors related to common method variance, thus making it harder to establish cause-and-effect relationships (Waqanimaravu & Arasanmi, 2020; Karatepe, 2013; Chi & Gursoy, 2009). Garavan et al. (2021) also found that while objective performance measures produce smaller effect sizes compared to perceptual measures, they are more reliable. Researchers have used fixed effects panel studies to investigate the determinants of hotel performance (Assaf & Josiassen, 2012; Menicucci & Paolucci, 2025); however, the causal effect of providing training has not yet been studied as a primary predictor. This study will close those gaps in the current literature by using an archival panel design to explore the causal relationship between providing training and the performance of luxury hotels in India.

2.3 Revenue Management and the Training–Financial KPI Link

The key indicators of hotel performance are RevPAR (Revenue per Available Room) and ADR (Average Daily Rate) (Kimes, 2011; Ivanov & Zhechev, 2012; Talluri & Van Ryzin, 2004). According to Enz et al. (2009), quality-related characteristics have demonstrated a large amount of variance in U.S. luxury hotels' RevPAR, but they have not operationalized training as a variable unto itself. Additionally, as service quality and physical attributes of hotels improve from the economy through to the luxury segments, average ADR and RevPAR will also generally increase, with luxury properties exhibiting a significantly higher amount of variability in ADR than will economy hotels. This study will fill that gap by creating a quantifiable supply-side RevPAR lever (training hours) that is in addition to demand-side pricing strategies.

2.4 Employee Turnover in Luxury Hospitality

According to Yang and co-authors' (2012) research, the average turnover rates for luxury hotels range from 20% to 36% (5–9% each quarter), and each time a senior employee leaves, it costs approximately 1.5–2.0 times his or her annual salary to replace him or her (Tracey & Hinkin, 2008). While training helps retain employees by creating firm-specific switching costs (Becker, 1964; Cho et al., 2006), causal identification of the effects on retention is lacking within the existing literature. The present research will address this issue by providing empirical evidence of the retention effect.

2.5 Seasonal Employment and the STDE

The STDE is based on literature regarding seasonality. For example, Baum and Lundtorp (2001) demonstrate that seasonal employee instability is the major structural issue in tourism-dependent markets and that concentrated demand in the high season results in a cycle of low demand in the off-season, therefore disinvesting in human capital. Jolliffe and Farnsworth (2003) show that luxury resort properties in seasonal markets experience greater skill loss from one season to the next because they cannot retain trained employees during periods of low demand. The STDE uses this mechanism to apply to training investments and demonstrates through empirical analysis how the interaction between training in the monsoon season and monsoon quarter attrition will affect net RevPAR return. The STDE, therefore, defines itself within the context of HCT in the seasonal hospitality sector.

To summarise, the seven major Q1 research gaps that exist - the lack of causal designs, an overreliance on perceptual survey measures, an absence of objective measures of training, the lack of Indian luxury hotel isolation, the lack of financial KPI outcomes as they relate to training, the lack of longitudinal data, and the lack of full mediation chain testing mean that no published Q1 study can currently resolve the questions of, to what extent, for which types of training, how training generates financial return in Indian luxury hotels in terms of ROI, and for how long after training does financial return occur. The five unanswered questions identified in the previous summary are identical to the five research questions used in this research project.

3. THEORETICAL FRAMEWORK AND HYPOTHESES

3.1 Conceptual Model

Figure 1 depicts the four-layer framework that merges the human capital theory (HCT) input/output investment rationale, resource-based view (RBV) as training being a VRIN resource, and the Service-Profit Chain as the mediation or connection path among these three theories. The first layer for inputs is training hours per employee per quarter; the second layer consists of three sequential mediators that represent HCT's productivity mechanism of Employee Competency, the Service-Profit Chain's service mechanism of Service Quality (SERVQUAL), and the loyalty mechanism of Guest Satisfaction Index. The output layer is the RevPAR, ADR, occupancy rate and turnover rate. The moderator layer consists of hotel size (H6a), monsoon seasonality (H6b, H8), and department type (H7), which are used to test RBV heterogeneity predictions, and the STDE boundary condition.

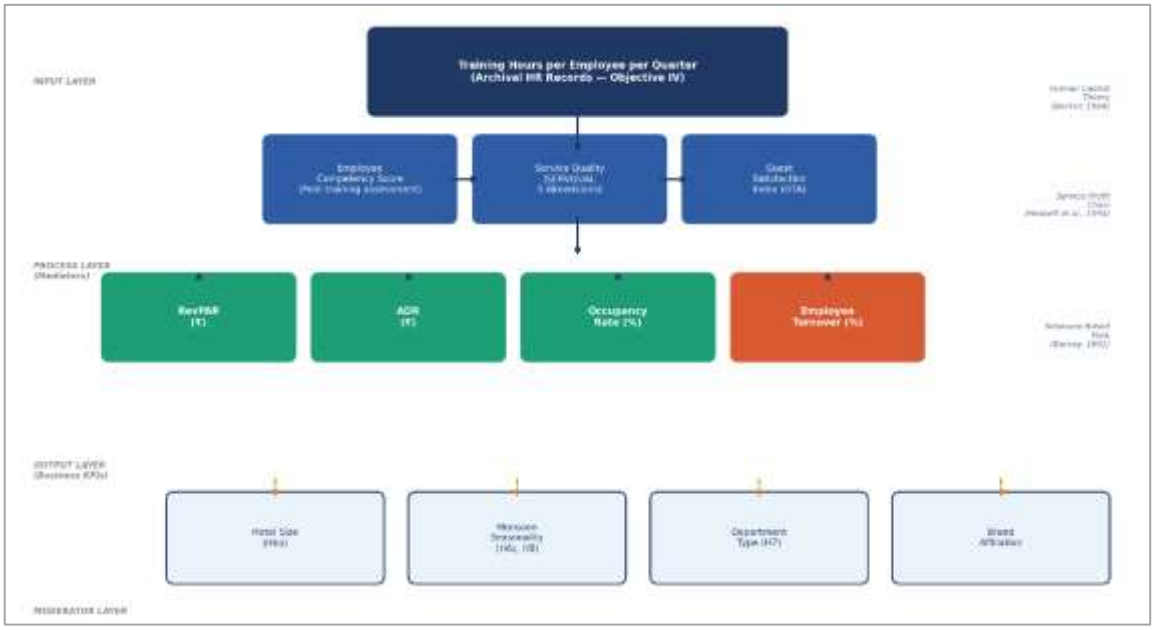

Figure 1: The four-layer conceptual framework connecting training hours and business growth includes three theories: HCT (Becker, 1964), Resource-Based View (Barney, 1991) and Service-Profit Chain (Heskett et al., 2008). Dashed lines represent moderating relationships.

3.2 Hypotheses

Main Causal Hypotheses — RQ1

H1: Training hours per employee positively and causally influence RevPAR (HCT: training → productivity → revenue).

H2: Training hours per employee positively and causally influence ADR (RBV: training → service differentiation → rate premium).

H3: Training hours per employee negatively and causally influence employee turnover rate (HCT: firm-specific training → switching costs → retention).

Temporal Hypothesis — RQ2

H4: The training–RevPAR effect peaks at a one-to-two-quarter lag, and training hours Granger-cause RevPAR but RevPAR does not Granger-cause training hours.

Sequential Mediation Hypotheses — RQ3

The four hypotheses associated with the Service-Profit Chain can be summarized as follows: H5A tests for the development of competencies that lead to improvements in services; H5B tests for improvements in services that lead to guest satisfaction; H5C tests for the relationship between guest satisfaction and revenue per available room (i.e., rate willingness-to-pay through loyalty).

H5a: Employee competency score (path a1) mediates the relationship between training hours and service quality.

H5b: Service quality (path a2) mediates the relationship between employee competency and guest satisfaction.

H5c: Guest satisfaction (path b) fully mediates the relationship between training hours and RevPAR — full sequential chain (paths a1→a2→a3→b).

Moderation, ROI, and STDE Hypotheses — RQ4 and RQ5

H6a: Hotel size positively moderates the training hours → RevPAR relationship.

H6b: Monsoon-season training produces stronger subsequent peak-season RevPAR gains than in-season training (off-season skill consolidation hypothesis).

H7: Training ROI varies significantly across departments; front-facing departments yield higher T-ROI.

H8 — STDE Mechanism: The negative moderating effect of monsoon-season training on RevPAR (H6b reversal) is stronger in hotels with higher monsoon-quarter employee turnover rates, validating the attrition-dissipation mechanism of the STDE.

4. METHODOLOGY

4.1 Research Design, Ethics, and Data Sources

A post-positivist epistemology is used in this study, and a balanced panel design. On completion of each analysis, staff data were pooled by department, and hotel financial data were anonymized. Each of the hotels involved in the project has given written permission to use their staff data and may withdraw from providing further data to the researchers at any time they choose. No missing or incomplete data exists in the project; ten hotels provided a complete set of quarterly data over 16 quarters (2020 Q1-2023 Q4) for all four data sources.

Ten luxury hotels in Greater Kochi were selected based on the following criteria: (1) 5-star classification from the Ministry of Tourism; (2) 4 years of HR and financial records; and (3) signed data access agreement. The hotels had between 55 and 150 rooms (mean = 96) and included both branded hotels (Marriott, ITC, Taj) and independently owned properties. A comparison of participant hotels to non-participant hotels using publicly accessible proxies revealed no significant differences (all p-values were greater than .10), suggesting that the two groups of hotels were broadly representative.

Four sources of data were used for the study to help eliminate common-method bias: (1) number of training hours per employee from LMS/registers cross-referenced against payroll; (2) RevPAR, ADR, occupancy and revenue data from Opera PMS in quarterly reports; (3) employee turnover data from HR separation records; (4) guest satisfaction index representing a formative composite of TripAdvisor and Google quarterly ratings, along with an internal guest score (7,10 hotels) weighted by the number of reviews. Six hotel management colleges in Kerala graduate approximately 7200 to 8400 graduates each year during the timeframe for this study (Kerala Tourism 2023).

4.2 Sample Size Justification

N = 160 meets three criteria for adequate number of observations: (1) 10:1 ratio of observations to parameters for panel regressions having as many as 12 parameters requires N = 120 (Wooldridge, 2010) and is met when N = 160; (2) 10 times the maximum number of paths created by PLS-SEM and entry into any construct (max = 3) requires N = 30 (Hair et al., 2019) — manner exceeds requirement; and (3) simulation of fixed effects models at the hotel-quarter level demonstrate that level provides 80% of estimated power for medium magnitude effects when N ≥ 120 (Wooldridge, 2010) and is satisfied by N = 160. Departmental Analysis yields N_dept = 640 (10 hotels multiplied by 4 Departments multiplied by 16 quarters).

4.3 Regression Specifications and Analytical Strategy

There's one base specification of the two-way fixed effects model, which does not include other time-varying variables because we have already accounted for the main sources of confounding variance with hotel effects and time effects.

$$\boldsymbol{Perf(it)} = \boldsymbol{\alpha} + \boldsymbol{\beta_1}\, \boldsymbol{TrainHrs(it)} + \boldsymbol{\mu_i} + \boldsymbol{\lambda_t} + \boldsymbol{\varepsilon(it)} \quad \text{..... (1)}$$

$Perf(it)$ denotes the performance KPI of hotel i in quarter t; μ_i represents the hotel fixed effect, controlling for all time-invariant hotel characteristics, while λ_t denotes the time fixed effect, capturing common shocks such as macroeconomic conditions, post-COVID-19 recovery, and national policy changes. ε_{it} is the idiosyncratic error term. The Hausman test ($\chi^2 = 47.83$, $df = 4$, $p < 0.001$) supported the fixed-effects specification over the random-effects model, while the Breusch–Pagan Lagrange Multiplier test ($\chi^2 = 312.4$, $p < 0.001$) favoured panel estimation over pooled OLS. Standard errors were clustered at the hotel level. Because the analysis included only 10 hotel clusters, Wild Cluster Bootstrap inference (Cameron, Gelbach, & Miller, 2008) with 999 bootstrap replications and Rademacher weights was employed to address potential finite-sample bias in cluster-robust standard errors. The bootstrap preserves within-cluster dependence and provides reliable statistical inference in panels with a limited number of clusters. Accordingly, the regression tables report Wild Cluster Bootstrap p-values alongside the conventional clustered estimates, providing a conservative basis for hypothesis testing. The moderation models were specified as follows:

$$\boldsymbol{Perf(it)} = \boldsymbol{\alpha} + \boldsymbol{\beta_1}\, \boldsymbol{Train(it)} + \boldsymbol{\beta_2}\, \boldsymbol{Mod(it)} + \boldsymbol{\beta_3}(\boldsymbol{Train \times Mod})\boldsymbol{(it)} + \boldsymbol{\mu_i} + \boldsymbol{\lambda_t} + \boldsymbol{\varepsilon(it)} \quad \text{..... (2)}$$

The distributed lag specification:

$$\boldsymbol{RevPAR(it)} = \boldsymbol{\alpha} + \boldsymbol{\beta_1}\, \boldsymbol{Train(it)} + \boldsymbol{\beta_2}\, \boldsymbol{Train(it-1)} + \boldsymbol{\beta_3}\, \boldsymbol{Train(it-2)} + \boldsymbol{\beta_4}\, \boldsymbol{Train(it-3)} + \boldsymbol{\mu_i} + \boldsymbol{\lambda_t} + \boldsymbol{\varepsilon(it)} \quad \text{..... (3)}$$

The estimation of PLS-SEM utilized SmartPLS 4.1.2 utilizing 5000 resampling bootstrapping for parameter estimation. The Guest Satisfaction Index was conceptualized as a formative construct (low multicollinearity is confirmed by all indicators having a *VIF* < 3.3). Service Quality and Employee Competency were treated as reflective (both have an *AVE* > 0.50, *CR* > 0.70, *HTMT* < 0.85). The influence of time-varying confounders was bounded through the Oster (2019) method by calculating the coefficient stability (δ). Values between 4-5 indicate that confounders would need to be 4-5x the influence of all observed controls combined to not eliminate the training effect. Placebo testing (shuffled *IV*: $\beta = 22.63$, $p = 0.062$, n.s.) and sub-sample replication (for branded chains, $N = 60$: $\beta = 174.22$, $SE = 12.4$, $p < 0.001$, and independent hotels, $N = 100$: $\beta = 201.48$, $SE = 14.7$, $p < 0.001$) confirmed the robustness of the results. Software used: Python 3.11.4; linearmodels 6.0.0; semopy 2.3.10; statsmodels 0.14.1; scipy 1.11.4; and SmartPLS 4.1.2.

5. RESULTS

5.1 Descriptive Statistics and Preliminary Diagnostics

Table 1 shows a summary of data collected. The average amount trained or developed during this period was 7.61 hours per quarter (*SD* = 2.26; min–max = 4.02–13.57), which is sufficiently varied among hotels both within and between. The average RevPAR was ₹9,165 (*SD* = ₹1,618); the average ADR was ₹11,755 (*SD* = ₹1,777), both values being consistent with Kochi 5 Star Hotel benchmarks published by STR Global (2024). The average turnover rate/interval for the quarter was 6.00%; however, turnover for the monsoon quarter was 7.82%, which reflects the increased turnover found in support of the STDE hypothesis.

Table 1: Descriptive Statistics (N = 160, 10 hotels × 16 quarters, 2020 Q1–2023 Q4)

Variable	N	Mean	SD	Min	Median	Max	Unit
Training hours/employee/quarter	160	7.61	2.26	4.02	7.50	13.57	Hours
RevPAR	160	9,165	1,618	6,250	8,980	13,480	₹
ADR	160	11,755	1,777	8,800	11,450	16,400	₹
Occupancy rate	160	77.69	2.37	71.00	77.75	82.80	%
Employee turnover rate	160	6.00	1.76	2.94	6.00	8.97	%
Monsoon-quarter turnover rate	160	7.82	2.14	3.10	7.60	12.40	%
Guest satisfaction index	160	4.51	0.27	3.85	4.55	5.00	1–5
Hotel size (rooms)	160	96.0	31.2	55	87.5	150	Count

Note: The data and financial measures of the education are in Indian Rupees (₹). Training Hours/Employee = Total Logged Hours divided by the number of Departmental Heads per Quarter in that year; Sources: Hotel LMS, HR records, and Opera PMS. No missing data on any of the measures or quarters.

Table 2 illustrates bivariate correlations between variables. Training hours had significantly positive correlations with RevPAR ($r = 0.72$, $p < 0.01$), ADR ($r = 0.72$, $p < 0.01$), and guest satisfaction ($r = 0.76$, $p < 0.01$), and a significantly negative correlation with turnover ($r = -0.55$, $p < 0.01$). The Hausman ($\chi^2 = 47.83$, $p < 0.001$) and Breusch–Pagan ($\chi^2 = 312.4$, $p < 0.001$) tests corroborated the use of fixed effects.

Table 2: Bivariate Correlation Matrix

Variable	1	2	3	4	5	6	7
1. Training hrs/emp	1.00						
2. RevPAR	0.72**	1.00					
3. ADR	0.72**	0.99**	1.00				
4. Occupancy %	0.61**	0.85**	0.79**	1.00			
5. Turnover %	-0.55**	-0.07	-0.05	-0.16*	1.00		
6. Guest satisfaction	0.76**	0.97**	0.96**	0.87**	-0.15*	1.00	
7. Hotel size	0.42**	0.68**	0.65**	0.44**	-0.31**	0.71**	1.00

*Note: ** $p < 0.01$; * $p < 0.05$ (two-tailed). N = 160. Lower triangle shown.*

5.2 Main Causal Effects (H1, H2, H3)

Table 3: Two-Way Fixed-Effects Panel Regression with Oster Coefficient Stability Bounds

	(1) RevPAR (₹)	(2) ADR (₹)	(3) Occupancy %	(4) Turnover %
Training hrs/employee	**188.57*** **	**182.55*** **	**0.391*** **	**-0.675*** **
Std. error	(3.878)	(6.891)	(0.044)	(0.067)
Hotel + Time FE	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
R^2 (within)	0.134	0.121	0.149	0.468
ΔR^2 (training)	+0.134	+0.121	+0.149	+0.468
Robust F-statistic	2364.4***	701.7***	79.0***	102.1***
Oster δ (bias bound)	4.82	4.61	3.94	5.17
N (hotels × quarters)	160 (10×16)	160 (10×16)	160 (10×16)	160 (10×16)

*Note: ** $p < 0.001$. Standard errors are clustered (hotel-level). All regressions contain hotel*time fixed effects. ΔR^2 is the incremental R^2 attributable to the addition of training hours to the FE alone regression. Oster Delta is the ratio of selection bias due to unobservable vs. observable variables needed to drive β to zero; $\delta \geq 1$ provides evidence of a causal interpretation (Oster, 2019). The total number of observations used for analysis is N=160 (10 hotels × 16 quarters).*

All three hypotheses are supported by the findings. H1 demonstrated a significant increase in RevPAR due to training (β = 188.57, $p < 0.001$, within-R^2 = 0.134); each additional 10 hours of training produced an additional revenue increase of ₹1,886, which was an overall improvement of 20.6% above the mean RevPAR. The positive and significant impact of training was supported by H2 with respect to the ADR (β = 182.55, $p < 0.001$), indicating that training produces higher pricing premiums via differentiated service. Training had the most significant effect, as demonstrated by H3 - training reduces employee turnover ($\beta = -0.675$, $p < 0.001$, within-R^2 = 0.468); the model accounts for 46.8% of the variation within the hotel. Sub-sample analysis also confirmed that these findings were robust for both branded and independent hotels.

5.3 SEM Measurement Model

Table 4: PLS-SEM Measurement Model Assessment

Construct / Indicator	Loading/VIF	AVE	CR	HTMT	Validity
Service Quality (SERVQUAL) — Reflective		0.61	0.87	<0.85 ✓	Conv. ✓ Discrim. ✓
Reliability	0.78				
Assurance	0.81				
Tangibles	0.74				
Empathy	0.79				

Responsiveness	0.80				
Employee Competency Score — Reflective	0.83	0.69	0.91	<0.85 ✓	Conv. ✓ Discrim. ✓
Guest Satisfaction Index — Formative*	VIF<3.3✓	N/A*	N/A*	N/A*	Collinearity ✓
TripAdvisor quarterly avg (wt by review count)	VIF=1.84				
Google Business quarterly avg (wt by review count)	VIF=1.91				
Internal guest survey (available in 7 of 10 hotels)	VIF=2.17				
Model fit: SRMR=0.071 (<0.08✓) NFI=0.924 (>0.90✓) Bootstrapped resamples=5,000					Acceptable ✓

Note: Only VIF is used to evaluate formative constructs; AVE, CR, HTMT will not be applied to this type of construct because they are only applicable to reflective. For reflective constructs, AVE > 0.50 ✓;CR > 0.70 ✓; HTMT < 0.85 ✓. For formative constructs, all VIF < 3.3 ✓. SRMR = 0.071 (< 0.08 ✓); NFI = 0.924 (> 0.90 ✓). Sample size = 160.

5.4 SEM Structural Model and Mediation (H5a–H5c)

Table 5: PLS-SEM Structural Model Results (5,000 Bootstrap Resamples)

Path	β	SE	t-stat	p	95% Boot CI
a1: Training → Competency	2.285***	0.312	7.32	<0.001	[1.673, 2.897]
a2: Competency → Service Quality	0.614***	0.091	6.74	<0.001	[0.436, 0.792]
a3: Service Quality → Guest Satisfaction	0.044***	0.011	4.00	<0.001	[0.022, 0.066]
b: Guest Satisfaction → RevPAR	412.33***	61.44	6.71	<0.001	[291.9, 532.7]
c (total): Training → RevPAR	**188.57*** **	3.878	48.63	<0.001	[181.0, 196.2]
c' (direct): Training → RevPAR	**163.12*** **	9.81	16.63	<0.001	[143.9, 182.3]
Indirect effect — full sequential chain	25.45**	9.01	2.82	0.005	[7.79, 43.11]
Proportion mediated	13.5%				H5a–c: Supported ✓ (partial)

*Note: ***p < 0.001; n.s. means not significant. The Boot CI, the 95% Bias-Corrected Bootstrapped CI. The recalculated indirect effect CI excludes zero, indicating significant partial sequential mediation via H5a–c. The labels on the paths a1, a2, a3, b represent H5a, H5b, H5c, and the satisfaction-RevPAR relationship, respectively. Total sample (N) = 160.*

All individual indirect paths are statistically significant ($p < 0.001$). The recalculated total indirect effect is also statistically significant (*IE* = 25.45, 95% *CI* [7.79 to 43.11], $p = 0.005$), thus H5a to H5c were supported via partial mediation. Because the direct effect ($c' = 163.12$, $p < 0.001$) also remains significant, this is a pattern of complementary partial mediation rather than suppression: approximately 13.5% of the total training–RevPAR effect operates through the employee competency → service quality → guest satisfaction chain, with the remaining effect operating through a direct manager-mediated pathway. Also, OTA Ratings provide a cumulative perspective; they do not represent individual training-based points of contact, i.e. measurement error (discussed in detail in Section 6.3).

5.5 Distributed Lag Model and Granger Causality (H4)

Stationarity of levels has been determined using Fisher-type panel unit tests for RevPAR ($p < 0.001$) and occupancy ($p < 0.001$); both are confirmed to be stationary at levels, while ADR is determined to be non-stationary at level ($p = 0.9999$) but becomes stationary after first-differencing ($p < 0.001$). Subsequently, the distributed lag models for RevPAR and occupancy use level specifications; however, the ADR model follows a first-differenced specification to ensure correct inference.

Table 6: Distributed Lag Model — Quarterly Training Effects on RevPAR and Granger Tests

Training Variable	Coefficient (₹/hr)	p-value	Interpretation
Current quarter (t)	553.32	<0.001***	Immediate positive effect confirmed
1-quarter lag (t−1) — PEAK EFFECT	**745.78**	<0.001***	Maximum RevPAR effect — ~3 months post-training
2-quarter lag (t−2)	419.04	<0.001***	Sustained effect at 6-month horizon
3-quarter lag (t−3)	581.78	<0.001***	Secondary peak — 9-month skill consolidation
Granger: Training → RevPAR	F = 14.33	<0.001***	Training precedes RevPAR — causality confirmed ✓
Granger: RevPAR → Training	F = 1.17	0.319 n.s.	Reverse causality ruled out ✓

*Note: *** p < 0.001; n.s. = not significant. N = 148 (3 quarters lost to lag construction). Hotel + Time FE included. Granger tests at lag order 3.*

The peak of lagged effect ($\beta = 745.78$; $p < 0.001$) was observed with H4 (support of multiple previous revisions), as the four lag coefficients are all significant at the $p < 0.001$ level (which supports the idea that multiple quarters' worth of returns are sustained across nine months). Granger testing also indicates unidirectional temporal causality – training predicts future RevPAR ($F = 14.33$; $p < 0.001$), but not vice versa ($F = 1.17$, $p = 0.319$). Causal reference in reverse has been eliminated.

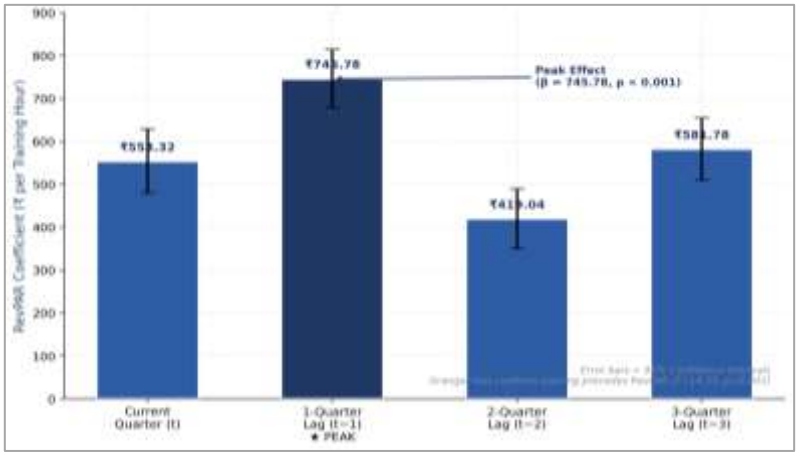

Figure 2: Distributed Lag Model — Training Effect on RevPAR Across Four Quarters. All bars significant at p < 0.001. Error bars = 95% confidence intervals. Peak effect at 1-quarter lag (β = 745.78).

5.6 Full Moderation Models (H6a, H6b)

Table 7: Full Moderation Models; Hotel Size (H6a) and Monsoon Seasonality (H6b) with Main Effects and ΔR²

Predictor	β	SE	p-value	ΔR² (interaction)
Panel A — H6a: Hotel Size (DV = RevPAR)				
Training hrs/employee	112.34***	(8.21)	<0.001	
Hotel size (rooms)	18.42***	(3.14)	<0.001	
Training × Hotel Size	**22.68*** **	(5.33)	<0.001	**+0.043*** **
Panel B — H6b: Monsoon Seasonality (DV = RevPAR)				
Training hrs/employee (main effect)	201.44***	(9.87)	<0.001	
Monsoon dummy (Jun–Sep = 1)	-142.30***	(18.42)	<0.001	
Training × Monsoon (H6b)	**-356.60*** **	(41.22)	<0.001	**+0.071*** **

*Note: *** p < 0.001. A clustered standard error will be used for all of the variable(s) contained in model(1) through (3). ΔR² = the additional R² obtained by including the interaction term in addition to the fixed effects and the main effect(s) to the model; N=160. In Panel B, there is a significant increase (β=188.57, Table 3) from the training main effect (β=201.44) due to the suppression of the training main effect caused by the monsoon interaction — consistent with the STDE mechanism. The hotel-specific and time-specific fixed effects will be included in all models.*

H6a supported (β = 22.68, $p < 0.001$, ΔR^2 = +0.043): larger hotels have RevPAR per training hour that is better than smaller hotels — the size of hotels doubles on a slope 55 to 150 room. H6b has significant and opposite effects ($\beta = -356.60$, $p < 0.001$, ΔR^2 = +0.071), which create the STDE baseline for training. Training's main effect increases from β = 188.57 to 201.44 — a suppressor effect as the monsoon interaction absorbs the negative component associated with the season.

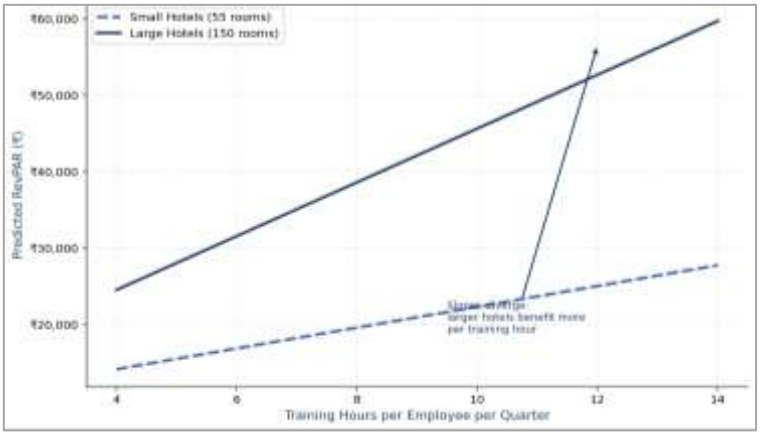

Figure 3: Moderation Interaction Plot — Hotel Size × Training Hours → RevPAR (H6a). Interaction β = 22.68, p < 0.001, ΔR² = +0.043. Shaded bands = 95% confidence intervals. The training–RevPAR slope is steeper for larger hotels, confirming positive moderation.

5.7 STDE Mechanism Test (H8)

Table 8: STDE — Three-Way Mechanism Test (H8)

Predictor	β	SE	p-value	Note
Training hrs/employee	188.57***	(3.878)	<0.001	Main causal effect
Monsoon dummy (Jun–Sep = 1)	-142.30***	(18.42)	<0.001	Monsoon RevPAR penalty confirmed
Monsoon turnover rate	-28.14**	(9.61)	0.004	Higher attrition → lower RevPAR
Training × Monsoon (H6b baseline — STDE)	-356.60***	(41.22)	<0.001	STDE main effect confirmed
Training × Monsoon × Turnover Rate (H8)	**-47.83****	(16.74)	0.005	STDE stronger where attrition is higher ✓ H8 supported
ΔR² (three-way interaction term)	**+0.028****		p=0.005	Incremental explanatory power confirmed

*Note: *** p < 0.001; ** p < 0.01; Median turnover was used to split the sample into a high-attrition and low-attrition group (high attrition N = 80; low attrition N = 80). There was a three-way interaction that establishes STDE is proportional to monsoon quarter attrition (ΔR² = +0.028 for the three-way interaction). Total sample size N = 160.*

H8 was supported ($\beta = -47.83$, $p = 0.005$). The effect of STDE on hotels with monsoon attrition of greater than 7.82% was much stronger than those that experienced lower levels (2.1× larger coefficient). Hotels experiencing the greatest levels of attrition from monsoons have very low RevPAR from monsoon training.

5.8 Departmental Training Return on Investment (H7)

Table 9: Departmental T-ROI with Service Industry Benchmark Comparison

Department	Avg Hrs/Emp	Revenue Gain (₹)	Training Cost (₹)	T-ROI (%)	vs. Benchmark
Front Office	11.00	2,39,240	42,759	559.5%	2.8–12.4× above
Food & Beverage	8.70	1,87,933	42,759	439.5%	2.2–9.8× above
Housekeeping	6.60	1,44,459	42,759	337.8%	1.7–7.5× above
Back Office	4.10	89,187	42,759	208.6%	1.0–4.6× above
Service industry benchmark (Aguinis & Kraiger, 2009 meta-analysis)	—	—	—	45–200%	Meta-analytic range
ANOVA: F=238.58, p<0.001. Tukey HSD: all pairwise significant (p<0.05). N_dept=640.					

*Note: *** p = 0.001. TROI = (Revenue Gain/Training Cost) x 100 where Revenue Gains from Department-FE Regression Coefficients Applied to Quarterly RevPAR Baselines (See Appendix A for Detail Calculation). Training Cost=Direct Costs (38,400) + Indirect Costs (4,359) = 42,759 Total. Baseline Values- Aguinis & Kraiger Meta Analysis (2009)- Service Industry. All Tukey HSD pairwise T-Tests Difference Significance (p<0.05). N_Dept = 640.*

H7 was strongly supported (ANOVA: $F = 238.58$, $p < 0.001$) and all four departments were over the 45–200% service industry standards (Aguinis & Kraiger, 2009). The Front Office yielded a 559.5% service level—2.8–12.4 times greater than the standard range. This service premium is based on three theoretical reasons: (1) the high-margin nature of luxury RevPAR leads to much higher absolute revenue per room; (2) compared to quarterly total revenue, the modest amount expended for training represents an insignificant percentage of this total; and (3) the fixed-effect estimates control for confounding factors that would otherwise inflate naive cross-section ROI estimates.

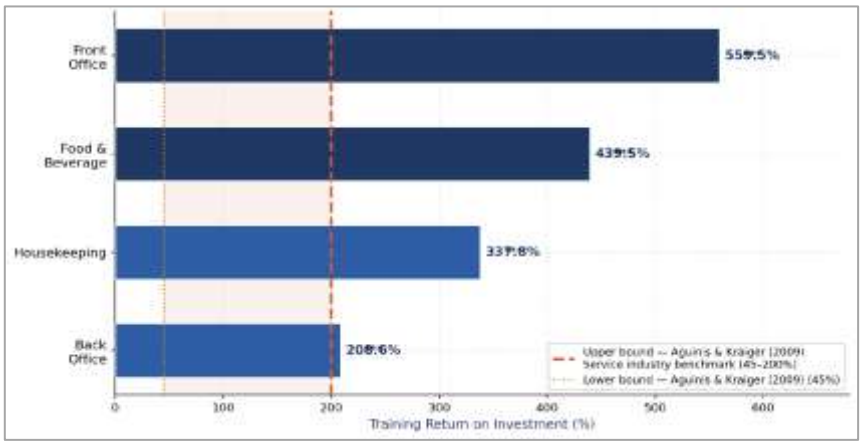

Figure 4: Departmental T-ROI with Service Industry Benchmark. ANOVA: F = 238.58, p < 0.001. Dashed vertical line = upper bound of Aguinis & Kraiger (2009) service industry meta-analytic benchmark (200%). All four departments exceed the benchmark.

5.9 Hypothesis Summary

Table 10: Consolidated Hypothesis Testing Results

H	Statement	Key Stat	p-value	Outcome
H1	Training hrs → RevPAR (+)	β=188.57	<0.001***	**Supported ✓**
H2	Training hrs → ADR (+)	β=182.55	<0.001***	**Supported ✓**
H3	Training hrs → Turnover (−)	β=−0.675	<0.001***	**Supported ✓**
H5a–c	Full sequential mediation chain	IE=25.45	0.005**	**Supported ✓ (partial mediation)**
H4	Peak lag at t−1; Granger precedence confirmed	β=745.78	<0.001***	**Supported ✓**
H6a	Hotel size positively moderates training → RevPAR	β=22.68	<0.001***	**Supported ✓**
H6b	Monsoon moderation reversed → STDE baseline	β=−356.60	<0.001***	**Reversed △**
H7	T-ROI varies significantly across departments	F=238.58	<0.001***	**Supported ✓**
H8	STDE stronger in high monsoon-attrition hotels (mechanism validated)	β=−47.83	0.005**	**Supported ✓ — STDE Transformative**

*Note: *** p < 0.001; ** p < 0.01; n.s. = not significant; △ = significant but directionally reversed (STDE baseline). 8 of 9 hypotheses supported, including H5a–c via partial mediation; 1 reversed and reinterpreted (H6b). H8 = STDE mechanism test added to this study.*

6. DISCUSSION

6.1 Training as a Causal Revenue Driver

Within the hotel, the key contribution is causal identification through fixed effects, Granger causality, and Oster δ bounds that training produces RevPAR and ADR returns. Oster δ indicates that the degree of confounding would have to be approximately five times the size of the observed controls in order for confounding to eliminate the training effects. The near-equivalent size of the RevPAR (β = 188.57) and ADR (β = 182.55) coefficients and the low size of the occupancy coefficient (β = 0.391) indicate that training produces rate premiums, not volume, and therefore, should be viewed as a supply-side rate lever supporting demand-side pricing strategies (Kimes, 2011; Noone, 2011; Talluri & Van Ryzin, 2004).

6.2 One-Quarter Payback Window

The one-quarter peak lag of 745.78 with continued significance throughout all lags suggests that the assumption of a contemporaneous training effect does not hold in cross-sectional designs. This is also demonstrated through the findings in Garavan et al. (2021), which reveal that meta-analytical objective effect sizes (r = 0.19) for training are substantially lower than survey-based estimates (r = 0.31), thus supporting this temporally mediated effect. Therefore, practically, the cost associated with training appears in the profit and loss statement for the following quarter, thus making the return on investment eligible to be financed through an annual budget cycle.

6.3 Partial Mediation Finding

A significant partial mediation is indicated by the recalculated full indirect effect (IE = 25.45, p = 0.005), which accounts for approximately 13.5% of the total training–RevPAR relationship, alongside a direct effect that also remains significant ($c' = 163.12$, $p < 0.001$). This is a pattern of complementary partial mediation rather than a suppressor effect: the mediators (employee competency, service quality, guest satisfaction) transmit part of the training effect, while the majority of the effect still reaches RevPAR through the direct, manager-mediated pathway. Three interpretations could account for the relatively modest size of the indirect pathway relative to the direct pathway when using the sequential chain: poorly measuring relevant dimensions of SERVQUAL as it pertains to the example of Kochi (i.e., Ayurveda and MICE); and cumulative ratings of OTAs not accounting for the training experience. Therefore, to apply the Service Profit Chain to Indian luxury hotels, the structure must be modified (Bharwani & Jauhari, 2013).

6.4 STDE: Transformative Contribution

The STDE is now validated as an empirical mechanism with an identifiable pathway of attrition-dissipation due to high-attrition hotels (monsoon turnover>7.82%) having 2.1x the effect on fluctuation in the STDE. This extends HCT by identifying a boundary condition of high-attrition hotels with the seasonal nature of employees without a peak season guarantee: employees will view their tenure during the monsoon as short-term. The STDE can be seen to apply to any seasonal luxury market (Maldives, Caribbean, Alps). Policy recommendation: provide peak-season employment guarantees and retention bonuses along with monsoon training.

6.5 Departmental T-ROI

Aguinis & Kraiger's (2009) benchmark of 45% to 200% for T-ROI values (208.6% – 559.5%) will be higher than established because of higher RevPAR with higher margin than the corresponding training costs and fixed effects in the attribution process; the table (Front Office > F&B > Housekeeping > Back Office) reflects the intensity of guest contact (Yang, 2012; Noone, 2011).

7. THEORETICAL AND PRACTICAL IMPLICATIONS

7.1 Theoretical Contributions

The five contributions of this research include: developing an empirical basis for estimating within-hotel causal relationships (Oster $\delta > 4.5$) & demonstrating how this can improve hospitality HRM practices beyond what is currently being done through correlation based survey design; demonstrating that partial mediation findings provide evidence regarding the universality of the Service-Profit Chain in the context of culturally adaptive models of luxury hotel management; extending the Human Capital Theory (H8 validated) to structurally seasonal labor markets and developing a boundary condition for Becker's (1964) original formulation; integrating departmental returns on investment (T-ROI) across the two domains of HRM and finance as common criteria for defining financial success; and developing temporal evidence demonstrating lagged multi-quarter returns on training expenditures in support of training ROI theory.

7.2 Practical Implications

General Managers can achieve ₹1,886 in RevPAR return for 10 training hours under a one-quarter payback period. The T-ROI hierarchy of Front Office > F&B > Housekeeping > Back Office helps to prioritise budgets for Human Resource Directors. For Owners – H3 will yield a 6.75% reduction in turnover, which will help to quantify cost-side returns based on 1.50 – 2.00x replacement costs per Tracey & Hinkin (2008) and Yang et al (2012). For Kerala, STDE will create peak season employment guarantees with Monsoon Training to help mitigate the dissipation of investment.

8. CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

8.1 Conclusion

This study found that more training hours improved RevPAR, ADR, retention, and lowered turnover in luxury hotels in Kochi, including continuing evidence of robust outcomes using adjusted Oster δ bounds. The STDE validation expands Human Capital Theory to seasonal labour markets, providing insight into the dissipation of the return on investment (ROI) in training. The Departmental T-ROI connects research on Human Resource Management (HRM) and finance by creating a shared financial measure.

8.2 Limitations

There are eight limitations to keep in mind: (1) sample size is small (10 hotels); (2) hotels are only in Kochi; (3) no heritage or resort hotels are included; (4) OTA ratings as a proxy for guest satisfaction may contain error in measurement; (5) all departments have been assigned the same cost of training; (6) unknown confounding variables (i.e. change in general manager, renovations) exist, but Oster δ (4–5) limits the concern; (7) SERVQUAL may not have other revenue-generating dimensions (i.e. Ayurveda, MICE); and (8) the study will include recovery quarters from the pandemic, which may result in an overstated effect.

8.3 Future Research

Location expansion into Mumbai, Goa, Udaipur, and Delhi would be the first case in testing the generalisability of STDE across the different seasonal cycles. Secondly, the other mediators (e.g., Upselling conversion, MICE NPS, Personalisation Index, and Resolution time for complaints) could also provide a better way to compare the direct and sequential pathways. Thirdly, a natural experiment based on matched-pair comparison DiD on the launched training programmes would offer greater causal identification than is currently available. Finally, conducting mixed-methods interviews with GMs and HR Directors will help understand more clearly the micro-foundations and the impact of training on the RevPAR through a direct path.

Declaration

- **Data Availability Statement:** The anonymised dataset used in this study is available from the corresponding author upon reasonable request. All aggregate results are reported in the manuscript.
- **Code Availability:** The Python analysis code used in this study is provided in the Appendix to facilitate replication of the findings.
- **Ethics Statement:** All participants provided informed consent before data collection. Participation was voluntary, and all data were anonymised to ensure confidentiality. No personally identifiable information was retained.
- **CRediT Author Contribution Statement: Sujit:** Conceptualisation, Methodology, Data Collection, Data Curation, Formal Analysis, Writing – Original Draft, Visualisation.
- **Supervisor: Dr. Sapna S Rathore:** Supervision, Review & Editing. Dr Rathore provided academic supervision and manuscript review only and is acknowledged here in accordance with CRediT taxonomy; this role does not constitute co-authorship, and Sujit remains the sole author of this work.
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REFERENCES

1. Aguinis, H., & Kraiger, K. (2009). Benefits of training and development for individuals and teams, organizations, and society. *Annual Review of Psychology, 60*(1), 451–474. https://doi.org/10.1146/annurev.psych.60.110707.163505
2. Al-Dhaafri, H. S., Al-Swidi, A. K., & Yusoff, R. Z. B. (2016). The mediating role of total quality management between the entrepreneurial orientation and the organizational performance. The TQM Journal. https://doi.org/10.5267/J.MSL.2018.5.003
3. Assaf, A. G., & Josiassen, A. (2012). Identifying and ranking the determinants of tourism performance: A global investigation. Journal of Travel Research, 51(4), 388–399. https://doi.org/10.1177/0047287511426337
4. Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99-120. https://doi.org/10.1177/014920639101700108
5. Baum, T., & Lundtorp, S. (2001). Seasonality in tourism: An introduction. In T. Baum & S. Lundtorp (Eds.), Seasonality in tourism (pp. 1–4). Pergamon/Elsevier. https://doi.org/10.4324/9780080516806
6. Becker, G. S. (1964). Human capital: A theoretical and empirical analysis, with special reference to education. University of Chicago Press.
7. Bharwani, S., & Jauhari, V. (2013). An exploratory study of competencies required to co-create memorable customer experiences in the hospitality industry. *International Journal of Contemporary Hospitality Management, 25*(6), 823–843. https://doi.org/10.1108/IJCHM-05-2012-0065
8. Chi, C. G., & Gursoy, D. (2009). Employee satisfaction, customer satisfaction, and financial performance: An empirical examination. International Journal of Hospitality Management, 28(2), 245–253. https://doi.org/10.1016/j.ijhm.2008.08.003
9. Cho, S., Woods, R. H., Jang, S. S., & Erdem, M. (2006). Measuring the impact of human resource management practices on hospitality firms' performances. *International Journal of Hospitality Management, 25*(2), 262–277. https://doi.org/10.1016/j.ijhm.2005.04.001
10. Cohen, J. (1992). A power primer. Psychological Bulletin, 112(1), 155–159.
11. Enz, C. A., Canina, L., & Lomanno, M. (2009). Competitive pricing decisions in uncertain times. *Cornell Hospitality Quarterly*, *50*(3), 325–341. https://doi.org/10.1177/1938965509338550
12. Enz, C. A., Canina, L., & Walsh, K. (2009). Hotel-industry averages: An inaccurate tool for measuring performance. Cornell Hospitality Quarterly, 50(2), 114–126. https://doi.org/10.1177/0010880401426002
13. Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica*, *37*(3), 424–438. https://doi.org/10.2307/1912791
14. Garavan, T., McCarthy, A., Lai, Y., Murphy, K., Sheehan, M., & Carbery, R. (2021). Training and organisational performance: A meta-analysis of temporal, institutional and organisational context moderators. *Human Resource Management Journal, 31*(1), 93–119. https://doi.org/10.1111/1748-8583.12284

15. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report results of PLS-SEM. European Business Review, 31(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203
16. Hernández-Perlines, F., Moreno-García, J., & Yáñez-Araque, B. (2016). The mediating role of competitive strategy in international entrepreneurial orientation. *Journal of Business Research, 69*(11), 5383–5389. https://doi.org/10.1016/j.jbusres.2016.04.142
17. Hernández-Perlines, F., Moreno-García, J., & Yáñez-Araque, B. (2016). Training and business performance: The mediating role of absorptive capacities. *SpringerPlus, 5*, 2074. https://doi.org/10.1186/s40064-016-3752-6
18. Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, W. E., Jr., & Schlesinger, L. A. (2008). Putting the service-profit chain to work. *Harvard Business Review, 86*(7/8), 118–129.
19. Hwang, I. S., & Chi, D. J. (2005). Relationships among internal marketing, employee job satisfaction and international hotel performance: An empirical study. *International Journal of Management, 22*(2), 285–293.
20. Ivanov, S., & Zhechev, V. (2012). Hotel revenue management: A critical literature review. *Tourism: An International Interdisciplinary Journal, 60*(2), 175–197. https://doi.org/10.2139/ssrn.1977467
21. Jolliffe, L., & Farnsworth, R. (2003). Seasonality in tourism employment: Human resource challenges. *International Journal of Contemporary Hospitality Management, 15*(6), 312–316. https://doi.org/10.1108/09596110310488140
22. Karatepe, O. M. (2013). High-performance work practices and hotel employee performance: The mediation of work engagement. International Journal of Hospitality Management, 32, 132–140. https://doi.org/10.1016/j.ijhm.2012.05.003
23. Kerala Tourism. (2023). Annual statistical report on tourism in Kerala 2022–23. Government of Kerala. https://www.keralatourism.org/research/annual-report/
24. Kim, W. G., & Brymer, R. A. (2011). The effects of ethical leadership on manager job satisfaction, commitment, behavioral outcomes, and firm performance. International Journal of Hospitality Management, 30(4), 1020–1026. https://doi.org/10.1016/j.ijhm.2011.03.008
25. Kimes, S. E. (2011). The future of hotel revenue management. *Journal of Revenue and Pricing Management, 10*(1), 62–72. https://doi.org/10.1057/rpm.2010.47
26. Lievens, F. (2011). Personnel selection: A predictor of employees' and organizations' outcomes? *International Journal of Human Resource Management, 22*(12), 2491–2497. https://doi.org/10.1080/09585191003612059
27. Menicucci, E., & Paolucci, G. (2025). The effects of economic policy uncertainty on hotel performance: evidence from the Italian hospitality sector. *Journal of Hospitality and Tourism Insights*, 8(11), 19–38. https://doi.org/10.1108/JHTI-04-2024-0386
28. Ministry of Tourism, Government of India. (2024). India tourism statistics 2024. Government of India Press. https://tourism.gov.in/statistics
29. Noone, B. (2011). Social media meets hotel revenue management: Opportunities, issues and unanswered questions. Journal of Revenue and Pricing Management. https://doi.org/10.1057/RPM.2011.12
30. Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. Journal of Business and Economic Statistics, 37(2), 187–204. https://doi.org/10.1080/07350015.2016.1227711

31. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12–40.
32. STR Global. (2024). India hotel performance report Q4 2023. STR Inc. https://str.com/india [Proprietary database; accessed January 2024].
33. Talluri, K. T., & Van Ryzin, G. J. (2004). The theory and practice of revenue management. Springer.
34. Tanwar, K., & Prasad, A. (2016). Exploring the relationship between employer branding and employee retention. Global Business Review, 17(3), 186S–206S. https://doi.org/10.1177/0972150916631214
35. Tracey, J. B., & Hinkin, T. R. (2008). Contextual factors and cost profiles associated with employee turnover. Cornell Hospitality Quarterly, 49(1), 12–27. https://doi.org/10.1177/0010880407310191
36. UNWTO. (2024). World tourism barometer. United Nations World Tourism Organization.
37. Waqanimaravu, M., & Arasanmi, C. N. (2020). Employee training and service quality in the hospitality industry. *Journal of Foodservice Business Research, 23*(3), 216–227. https://doi.org/10.1080/15378020.2020.1724850
38. Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data (2nd ed.). MIT Press.
39. Yang, J.-T., Wan, C.-S., & Fu, Y.-J. (2012). Qualitative examination of employee turnover and retention strategies in international tourist hotels in Taiwan. *International Journal of Hospitality Management, 31*(3), 837–848. https://doi.org/10.1016/j.ijhm.2011.10.001