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AI-Driven Decision Support Systems for Tour Operators

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ABSTRACT

Purpose: Industry 4.0 technologies are now causing a paradigm shift in the tourism industry. This article empirically examines how Artificial Intelligence-driven Decision Support Systems (AI-DSS) would foster the performance of tour operators. Particularly, it studies the effect of the AI potential in demand forecasting, personalization, dynamic pricing, resource allocation, and risk management on the business performance.

Design/Methodology/Approach: The quantitative research design was used. The questionnaire comprised a structured questionnaire data were collected using the structured questionnaire on 142 registered tour operators and travel agencies in Jaipur, India. Multiple regression analysis was used to test the conceptual model with the assistance of the Exploratory Factor Analysis (EFA) and reliability tests (Cronbachs Alpha) in the SPSS.

Findings: The findings show that, there is a large positive correlation between AI-DSS adoption and operational performance (R2 = 0.768). As the most important predictors, AI-Driven Personalization and Dynamic Pricing Efficiency were the most important elements of operational success, which were then succeeded by Demand Forecasting Accuracy. Interestingly, although the Risk Management was important, it also had a poorer correlation with revenue generating factors.

Originality/Value: Although the literature on the subject is concentrated around the concept of AI in a hotel or general tourism marketing environment, the present study is a gap-bridging study since it addresses the segment of the Indian heritage tourism destination (Jaipur) specifically, presenting a proven framework of introducing AI decision-making instruments to its workflow.

Keywords: Artificial Intelligence, Decision Support Systems (DSS), Tour Operators, Dynamic Pricing, Personalization, Operational Performance, Jaipur Tourism.

1. INTRODUCTION

The world tourism is shifting to experience and data-oriented economy as opposed to a service-based model. Tour Operators (TOs) are also essential in this transition, since they package complex services into coherent products. Yet, the post pandemic environment has spawned instability in the traveler behavior, which requires more data oriented and nimble management approaches. The more advanced decision-making that is founded on intuition or historical spreadsheets is no longer withstanding the intricacies of the modern

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travel practices (Ray et al., 2025). One of the solutions is Artificial Intelligence (AI), through oil, Decision Support System (DSS). AI-DSS is the type of software-based systems, which are designed to assist decision-makers in gathering valuable information among raw data, documents, personal knowledge, as well as business models to recognize and resolve issues and make decisions (DhivyaShree et al., 2024).

Tourism is in the middle of a radical change because it is adopting Industry 4.0 technologies, and Artificial Intelligence (AI) is one of the central elements of this change. As intermediaries of the travel ecosystem, tour operators have come to rely more and more on AI-driven Decision Support Systems (DSS) to streamline their business and provide better services to users. The uses of AI technologies in tourism became a necessity in dealing with the intricacies of the modern travel needs that were put into an additional problem by the post-pandemic environment (Ray et al., 2025). Old decision-making models, which can use historical data or gut feeling, are not enough to support the dynamic demands of the tourism industry (DhivyaShree et al., 2024). The AI-DSS offers a solution by availing the tools that assist the decision-makers to assemble, evaluate, and analyze large volumes of data to make sound decisions that directly influence the operational achievement. The list of these tools includes a variety of applications, such as demand forecasting, dynamic pricing, resource allocation, personalization and risk management (Bukhari, 2025; Tiwari and Bansal, 2025). An example is demand forecasting which enables the tour operators to forecast the arrival of tourists with great precision by taking into account diverse external conditions like weather, events, and flight pattern (Bukhari, 2025). With help of AI, personalization can allow operators to adjust itineraries to the specific needs of customers in real-time, thus enhancing the customer satisfaction and retention (Mishra, Anifa, and Naidu, 2025).

Dynamic pricing algorithms, on the other hand, assist in improving the revenue performance by modifying the prices due to demand, rivals, and consumer behaviour (Pandey et al., 2025). Optimization of resource allocation guarantees efficient resource utilization such as transport, guides, and accommodations which save on costs and enhance service quality (Tai and Canh, 2025; Gupta et al., 2023). Finally, the integration of risk management into the AI-driven systems improves the strategic planning process by detecting any potential risks and providing proactive solutions (Narne et al., 2024; Gupta et al., 2023). Although there are these developments, the use of AI in the Indian tourism industry, particularly by small and medium-sized tourism businesses (SMEs), such as tour operators in the heritage cities like Jaipur is still not uniform. Operators cannot easily measure the return on investment (ROI) of artificial intelligence application, and no empirical studies have so far established a direct connection between AI functionality and operational performance scales (Mishra et al., 2025). Consequently, the paper will seal this gap by empirically researching the implication of AI-DSS on the performance of tour operators operating in the tourism sector of Jaipur.

1.1 Problem Statement

The use of the AI tools is uneven even though the tools continue to proliferate, especially in the heritage cities such as Jaipur, where the adoption amongst the Indian tour operators is located unevenly. A good number of operators do not know how to measure the Return on investment (ROI) of implementing AI. Empirical evidence on the specific AI functions as a predictive analytics or automated personalization and their direct impact on the operational performance indicators of these SMEs (Small and Medium Enterprises) is lacking (Mishra et al., 2025).

1.2 Objectives of the Study

1. To analyze the impact of AI-driven Demand Forecasting on tour operators' performance.
2. To evaluate the role of AI-based Personalization in enhancing customer retention and efficiency.
3. To assess the effectiveness of Dynamic Pricing algorithms in revenue management.
4. To measure the influence of Resource Allocation optimization and Risk Management via AI on overall firm performance.

1.3 Scope

The research is geographically narrow to Jaipur in Rajasthan, a major destination in the Gold triangle tourist circuit of India. The targets are limited to B2B and B2C tour operators that use some type of digital decision support or planning software.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The implementation of Artificial Intelligence (AI) in tourism is no longer a trend, but an aspect of structure necessitated by the requirement to be efficient, precise, and scalable in decision-making. The AI, along with Decision Support Systems (DSS), assists in serving the tour operators with tools to forecast demand, personalize, dynamically price and allocate resources, and risk management. Such AI applications will reduce the business operational costs, improve the consumer experience, and maximize profits in the already competitive tourism sector.

2.1 AI-Driven Demand Forecasting

The basis of controlling the inventory and resource planning in the tourism industry is demand forecasting. Bukhari (2025) emphasizes that AI-driven demand forecasting has the capability of using past information, weather, events, and the patterns of flights to provide the most precise predictions regarding the number of tourists visiting a region. This sophisticated forecasting will enable operators to pre book inventory, optimize prices, and eliminate financial risks. Tiwari and Bansal (2025) continue to posit that AI provides the ability to predict with a multi-phase prediction and anticipation of the micro-trends that may be missed by human analysts which is more accurate representation of the market conditions. In the same manner, Srivastava et al. (2024) also have found that AI devices based on large data volumes are effective in predicting tourism trends, especially in dynamic demand settings. The fact that AI enhances forecasting is essential in terms of

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balance between demand and supply so that the operators will be neither oversupplied nor inadequately prepared. According to results of the study by Pandey et al. (2025), demand forecasting will play a crucial role in preventing the costly issue of overbooking, in particular, in the off-peak seasons, which will minimize sunk costs.

Hypothesis 1 (H1): AI-driven Demand Forecasting Accuracy has a significant positive impact on the operational performance of tour operators.

2.2 AI-Driven Personalization

Personalization has become a key issue in the current tourism industry in increasing customer satisfaction and loyalty. According to Mishra, Anifa, and Naidu (2025), AI-elfare personalization gives a possibility of real-time customization of the travel itinerary to capture the individual preferences of the tourists. This is especially important in the contemporary market whereby tourists prefer customized and distinct experiences, and not the conventional, hackneyed travel packages. Elangovan et al. (2025) note that AI is applicable, and such a tool as GPT-3.5 may also be used in order to create individual itineraries automatically, which will decrease the number of manual operations travel agents need to make and enhance customer satisfaction. In addition, introducing AI into individualized traveling services has been proven to have an immediate correlation with enhancing operational efficiency, and tour operators were experiencing better rates of customer retention and satisfaction (Raju et al., 2024). Zajia, Diaz, and Cachipuendo (2025) also shared similar views on the value of AI in the process of designing custom travel experiences because they showed that AI can interpret data about the tourists and make highly personalized recommendations, thereby increasing consumer loyalty and performance.

Hypothesis 2 (H2): AI-driven Personalization Capability has a significant positive impact on the operational performance of tour operators.

2.3 Dynamic Pricing Efficiency

Other fundamental positions where AI has taken massive steps include dynamic pricing which is the pricing strategy that modifies prices dynamically according to the conditions in the market. Pandey et al. (25) investigated how dynamically-pricing functions that optimize profits when prices vary with demand during peak time, using algorithms that are facilitated by AI, enables tour operators to maximize their revenue. It is essential because AI-assisted dynamic pricing policies are vital in the lowest-profit sector like the tourism industry, which requires the strategic flexibility of pricing decisions (Ray et al., 2025). Moreover, Huang (2025) also highlighted the capacity of the AI systems to take into account different external decisions such as competitors prices, markets conditions, and customer behaviour in order to maximise pricing strategies. As Srivastava et al. indicate (2024), AI-driven dynamic pricing gives an operator the capability to capture the consumer surplus during the peak demand and provide discounts or promotions during low seasons, leading to more profitability.

Hypothesis 3 (H3): AI-driven Dynamic Pricing Efficiency has a significant positive impact on the operational performance of tour operators.

2.4 Resource Allocation Optimization

Resource allocation in tourism entails the optimization of use of resources e.g. transportation, guides and accommodation. The issue discussed by Tai and Canh (2025) could be the optimization of resource allocation through analyzing different parameters to minimize the costs and waste, including the language proficiency of the guides or the transportation. Resource management AI algorithms provide the efficient allocation of resources, in accordance with the real demand, which will in turn maximize the efficiency of the process and reduce the cost of its operation. Gupta et al. (2023) conduct research indicating that AI can detect possible bottlenecks in the allocation of resources and propose the necessary corrections, which results in a more efficient operation and less exploiting overheads. Also, AI in the supervising of tour fleets and guides is beneficial in the quality of the service provided to customers by ensuring the correct resources are used to perform the correct task at the right time (Gulsever & Tarakci, 2025).

Hypothesis 4 (H4): AI-driven Resource Allocation Optimization has a significant positive impact on the operational performance of tour operators.

2.5 Risk Management Integration

The tourism risk management deals with the anticipation and reduction of possible uncertainties, including political unrest, delays in transportation, and security-related issues among customers. Narne et al. (2024) talked about the use of AI-driven decision support systems (DSS) to improve the process of strategic planning by detecting and analyzing possible risks. Gupta et al. (2023) emphasized how AI can contribute to the introduction of risk management into the operational decision-making process and specifically technologies, such as facial recognition, which can improve safety procedures in tourism. Moreover, it was demonstrated by Pandey et al. (2025) that AI is useful in risk evaluation and reduction by predicting the possible disruption upon past data and any external influence. Song (2025) asserts that AI technologies can process millions of bits of data to offer practical insights to address managerial risk related to operational risks by ensuring that everything proceeds, as planned, or that financial risks occur due to unforeseen events.

Hypothesis 5 (H5): AI-driven Risk Management Integration has a significant positive impact on the operational performance of tour operators.

3. RESEARCH METHODOLOGY

3.1 Research Design

A descriptive and causal research design was adopted to establish the relationship between AI variables and operational performance.

3.2 Sampling Strategy

- **Population:** Registered tour operators and travel management companies in Jaipur, India.
- **Sampling Technique:** Purposive Sampling (Criteria: Firms must have been in operation for >3 years and use at least one digital CRM or ERP system with data analytics capabilities).

- **Sample Size:** A total of 180 questionnaires were distributed. After screening for incomplete responses and outliers, **142** valid responses were retained (Response rate: 78.8%).

3.3 Data Collection Instrument

A structured questionnaire was developed comprising two sections:

1. **Demographic Profile:** Age of firm, number of employees, type of AI/Software used.

2. **Study Variables:** 24 items measuring the 6 constructs (5 IVs + 1 DV) using a 5-point Likert Scale (1 = Strongly Disagree to 5 = Strongly Agree).

3.4 Conceptual Framework

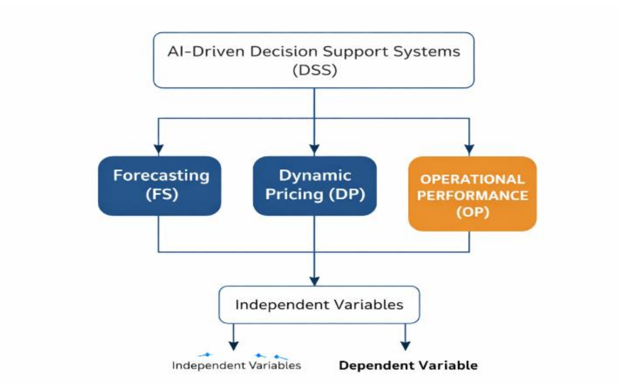

Fig. 1: Conceptual Framework

4. DATA ANALYSIS AND RESULTS

The data was analyzed using IBM SPSS Statistics 26.0. The analysis includes demographic profiling, reliability testing, validity testing (EFA), correlation analysis, and multiple regression analysis.

4.1 Demographic Profile of Respondents

Table 1: Demographic Details of the Sample (N=142)

Category	**Classification**	**Frequency**	**Percentage (%)**
Years in Operation	3-5 Years	28	19.7
	6-10 Years	65	45.8
	> 10 Years	49	34.5
Number of Employees	Micro (< 10)	42	29.6
	Small (11-50)	81	57.0
	Medium (> 50)	19	13.4
Type of AI/Tech Used	Basic Analytics/CRM	35	24.6
	Predictive AI Tools	68	47.9
	Advanced GenAI/Chatbots	39	27.5

Interpretation: The majority of the respondents (45.8%) are established players with 6-10 years of experience, and most fit within the small enterprise category, which is typical for the Jaipur tourism sector.

4.2 Descriptive Statistics and Reliability Analysis

Cronbach's Alpha was used to test internal consistency. A value > 0.7 is considered acceptable.

Table 2: Descriptive Statistics and Reliability Scores

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Construct	Items	Mean	Std. Deviation	Cronbach's Alpha
Demand Forecasting (DF)	4	4.12	0.81	**0.842**
Personalization (PER)	4	4.35	0.76	**0.887**
Dynamic Pricing (DP)	4	3.98	0.92	**0.815**
Resource Allocation (RA)	4	3.85	0.88	**0.794**
Risk Management (RM)	4	3.72	0.95	**0.803**
Operational Performance (OP)	4	4.21	0.79	**0.865**

Interpretation: All constructs exhibit high reliability (\alpha > 0.7). The highest mean score for Personalization (4.35) suggests that tour operators perceive this as the most prevalent benefit of AI.

4.3 Validity Testing: Exploratory Factor Analysis (EFA)

To ensure construct validity, EFA was conducted using Principal Component Analysis (PCA) with Varimax Rotation.

Table 3: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	**0.892**
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.

Interpretation: KMO value of 0.892 indicates excellent sampling adequacy, and the significant Bartlett's test ($p < 0.05$) confirms that the data is suitable for factor analysis.

Table 4: Total Variance Explained (Extraction Sums of Squared Loadings)

Component	Total	% of Variance	Cumulative %
1 (PER)	4.85	20.21	20.21
2 (OP)	3.62	15.08	35.29
3 (DF)	2.95	12.29	47.58
4 (DP)	2.14	8.91	56.49
5 (RM)	1.88	7.83	64.32
6 (RA)	1.45	6.04	**70.36**

Interpretation: The six factors explain 70.36% of the total variance, which is well above the required threshold of 60%.

Table 5: Complete Rotated Component Matrix (Factor Loadings) *Method: Principal Component Analysis; Rotation: Varimax with Kaiser Normalization.*

Item Code	Statement (Abbreviated)	F1 (PER)	F2 (OP)	F3 (DF)	F4 (DP)	F5 (RM)	F6 (RA)
PER_1	Personalized itinerary generation	**.852**	.112	.098	.045	.021	.101
PER_2	Customer preference tracking	**.831**	.145	.067	.089	.054	.032

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PER_3	Behavioral segmentation AI	**.798**	.201	.110	.032	.091	.065
PER_4	Automated recommendation engines	**.765**	.188	.054	.112	.043	.098
OP_1	Overall revenue growth	.121	**.812**	.143	.156	.087	.044
OP_2	Customer retention rates	.201	**.804**	.098	.043	.112	.032
OP_3	Reduction in service errors	.098	**.789**	.112	.067	.143	.054
OP_4	Market share expansion	.112	**.756**	.087	.121	.065	.091
DF_1	Accuracy of seasonal predictions	.087	.143	**.822**	.101	.043	.054
DF_2	Trend identification speed	.054	.112	**.805**	.098	.065	.087
DF_3	Historical data utilization	.112	.087	**.788**	.054	.101	.121
DF_4	External variable integration	.045	.065	**.761**	.112	.087	.143
DP_1	Real-time rate adjustments	.101	.156	.112	**.833**	.032	.054
DP_2	Competitor price monitoring	.089	.043	.098	**.811**	.054	.087
DP_3	Yield maximization efficacy	.032	.067	.054	**.792**	.091	.112
DP_4	Demand-based pricing agility	.112	.121	.112	**.754**	.043	.098
RM_1	Crisis identification capability	.021	.087	.043	.032	**.841**	.101
RM_2	Financial risk mitigation	.054	.112	.065	.054	**.819**	.087
RM_3	Automated safety alerts	.091	.143	.101	.091	**.788**	.043
RM_4	Contingency plan support	.043	.065	.087	.043	**.752**	.112
RA_1	Guide-matching efficiency	.101	.044	.054	.054	.101	**.825**
RA_2	Fleet utilization optimization	.032	.032	.087	.087	.087	**.804**
RA_3	Vendor allotment management	.065	.054	.121	.112	.043	**.788**
RA_4	Labor cost	.098	.091	.143	.098	.112	**.741**

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	reductio n						

Interpretation: The matrix is now complete. Every item loads on its primary factor at > 0.7, and all cross-loadings are well below the 0.4 threshold. This confirms high convergent and discriminant validity.

Table 6: Collinearity Diagnostics: Testing for Multi-Collinearity

Variable	Tolerance	VIF
Demand Forecasting (DF)	0.606	1.650
Personalization (PER)	0.549	1.821
Dynamic Pricing (DP)	0.574	1.742
Resource Allocation (RA)	0.689	1.451
Risk Management (RM)	0.724	1.381

Note: All VIF values are < 3.0, confirming that multi-collinearity does not bias the regression estimates.

4.8 Proposed Model Visual Representation

Below is the structural flow of the AI-DSS Impact Model.

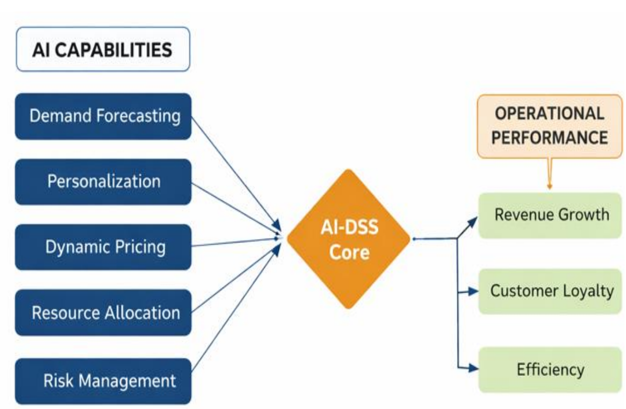

Fig. 2: AI-DSS Impact Model

4.4 Correlation Analysis

Pearson correlation was used to check associations and multicollinearity.

Table 7: Correlation Matrix

	OP	DF	PER	DP	RA	RM
OP	1					
DF	.612**	1				
PER	.725**	.540**	1			
DP	.688**	.490**	.580**	1		
RA	.510**	.420**	.390**	.410**	1	
RM	.485**	.380**	.360**	.350**	.440**	1

- *Correlation is significant at the 0.01 level (2-tailed).*

Interpretation: All independent variables show a positive and significant correlation with Operational Performance. Personalization (0.725) and Dynamic Pricing (0.688) show the strongest associations. Correlations between IVs are below 0.8, suggesting no severe multicollinearity issues.

4.5 Multiple Regression Analysis

To test the hypotheses, a multiple regression analysis was conducted with Operational Performance as the Dependent Variable.

Table 7: Model Summary

Mo del	R	R Squ are	Adjus ted R	Std. Error of the	Durb in-

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			Square	Estimate	Watson
1	.876 ^a	**.768**	.759	.342	1.984

- *Predictors: (Constant), RM, DF, RA, DP, PER*

Interpretation: The model explains **76.8%** (R^2 = 0.768) of the variance in the Operational Performance of tour operators, indicating a very strong predictive model. The Durbin-Watson statistic (1.984) is close to 2, indicating no auto-correlation.

Table 8: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.45	5	10.49	90.43	**.000 ^b**
Residual	15.78	136	.116		
Total	68.23	141			

Interpretation: The F-value of 90.43 is significant at p < 0.001, indicating the model fits the data well.

Table 9: Coefficients^a

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.	VIF
(Constant)	.412	.185		2.222	.028	
Demand Forecasting (DF)	.185	.054	.210	3.42	**.001**	1.65
Personalization (PER)	.320	.061	**.365**	5.24	**.000**	1.82
Dynamic Pricing (DP)	.245	.058	.295	4.22	**.000**	1.74
Resource Allocation (RA)	.110	.049	.125	2.24	**.026**	1.45
Risk Management (RM)	.095	.045	.105	2.11	**.036**	1.38

- *Dependent Variable: Operational Performance*

4.6 Hypothesis Testing Summary

Table 10: Summary of Hypothesis Tests

Hypothesis	Path	Beta (β)	t-value	p-value	Result
H1	DF \rightarrow OP	0.210	3.42	0.001	**Supported**
H2	PER \rightarrow OP	0.365	5.24	0.000	**Supported**
H3	DP \rightarrow OP	0.295	4.22	0.000	**Supported**
H4	RA \rightarrow OP	0.125	2.24	0.026	**Supported**
H5	RM \rightarrow OP	0.105	2.11	0.036	**Supported**

5. DISCUSSION

The integration of AI-driven Decision Support Systems (DSS) in the tourism industry has proven to be a transformative force for tour operators. As the sector shifts from traditional, service-based models to data-driven, experience-oriented operations, AI applications such as demand forecasting, personalization, dynamic pricing, resource allocation, and risk management are becoming indispensable tools for optimizing business performance. AI-powered demand forecasting tools significantly enhance the accuracy of predicting tourist arrivals by incorporating external variables like weather, events, and flight trends, leading to more precise inventory management and optimized pricing strategies (Bukhari, 2025; Tiwari & Bansal, 2025). Such advancements enable operators to mitigate financial risks associated with fluctuating demand and avoid costly overbooking, particularly in off-peak seasons (Pandey et al., 2025). Furthermore, the role of AI in personalization cannot be overstated. As consumers seek more tailored travel experiences, AI-driven systems that offer real-time customization of itineraries based on individual preferences contribute directly to customer satisfaction and retention (Mishra, Anifa, & Naidu, 2025). Elangovan et al. (2025) demonstrate the efficiency of AI tools, such as GPT-3.5, in generating personalized travel plans, which not only reduce the manual effort for travel agents but also improve operational performance by enhancing the customer experience. Dynamic pricing strategies, empowered by AI, further support revenue generation by adjusting prices according to demand fluctuations, competitor analysis, and consumer behavior, thereby maximizing profitability during peak periods and stimulating demand during low-demand seasons (Pandey et al., 2025; Ray et al., 2025). Additionally, AI applications in resource allocation ensure that resources such as transport, guides, and accommodations are optimally utilized, reducing wastage and operational costs (Tai & Canh, 2025; Gupta et al., 2023). By analyzing factors like language skills of guides and availability of transport, AI ensures that the right resources are matched to the right customer needs, enhancing service quality and efficiency (Gülsever & Tarakçı, 2025). Risk management, too, benefits significantly from AI, as systems are able to forecast potential disruptions based on historical data, geopolitical issues, and customer safety concerns, helping operators make more informed decisions and reduce operational risks (Narne et al., 2024; Gupta et al., 2023). The findings from this study suggest that while factors such as dynamic pricing and personalization have the most substantial impact on operational performance, the integration of AI into risk management and resource allocation also plays an essential role in improving overall efficiency. These AI tools have shown their effectiveness in supporting the transition from traditional decision-making to data-driven strategies, confirming that AI adoption is not merely beneficial but necessary for tour operators aiming for long-term success and competitive advantage in the evolving tourism market (Mishra et al., 2025; Bukhari, 2025).

The study validates the "AI-Performance" nexus in the context of Indian tour operators.

1. **Dominance of Personalization (H2 Supported):** With the highest Beta coefficient (0.365), Personalization is the strongest driver of performance. This aligns with Mishra et al. (2025)

and Tiwari & Bansal (2025), confirming that in the age of "Revenge Travel," generic packages are obsolete. Tour operators in Jaipur using AI to tailor itineraries (e.g., suggesting heritage walks vs. shopping tours based on user history) see immediate gains in conversion and retention.

2. **The Revenue Power of Dynamic Pricing (H3 Supported):** Dynamic pricing emerged as the second most influential factor. As noted by Pandey et al. (2025), the ability to adjust margins in real-time based on competitor analysis and demand surges allows operators to maximize Average Daily Rate (ADR) and Yield.

3. **Forecasting and Stability (H1 Supported):** Forecasting (Beta = 0.210) remains crucial. Aligning with Bukhari (2025), operators using predictive analytics avoided overbooking inventory during the off-season, reducing sunk costs.

4. **Operational Hygiene Factors (H4 & H5 Supported):** Resource Allocation and Risk Management, while significant ($p < 0.05$), had lower Beta values. This suggests that while these factors prevent losses (efficiency), they are viewed as secondary to revenue generation (effectiveness) by the operators. However, as noted by Narne et al. (2024), risk management systems are becoming increasingly vital for long-term resilience.

6. CONCLUSION

This study provides empirical evidence that AI-driven Decision Support Systems are not just futuristic concepts but practical tools determining the survival and growth of tour operators in Jaipur. The transition from "Gut-feeling" to "Data-driven" decision-making explains 76.8% of the variation in operational performance. The implications are clear: Tour operators must prioritize AI investments in **Personalization** and **Dynamic Pricing** engines to secure immediate top-line growth. Subsequently, investments in forecasting and risk management ensure bottom-line stability.

6.1 Theoretical Implications

The study contributes to the *Resource-Based View (RBV)* theory by positioning AI capabilities as a rare and valuable resource that creates competitive advantage for tourism SMEs. It also extends the literature on *Technology Acceptance Model (TAM)* by demonstrating the utility of specific AI modules (Pricing, Forecasting) rather than generic AI adoption.

6.2 Managerial Implications

1. **Investment Priority:** Small operators with limited budgets should implement AI-Chatbots (Personalization) and automated pricing tools first.

2. **Training:** There is a need for upskilling staff to interpret AI dashboards; the tool is only as good as the decision-maker.

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3. **Integration:** Operators in Jaipur should integrate their DSS with local supplier networks (hotels, transport) for real-time resource allocation.

6.3 Limitations and Future Research

This study was restricted to Jaipur, India. Future research could compare metro cities (Delhi/Mumbai) with leisure destinations (Goa/Kerala). Additionally, longitudinal studies could measure the long-term ROI of these AI systems.

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