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Role Of Artificial Intelligence In Tourism And Hospitality Business In Kanyakumari District

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Abstract
The tourism and hospitality sector is changing rapidly with the integration of Artificial Intelligence (AI).This study focuses on the role of AI in tourism and hospitality businesses. The study uses primary data collected from 200 respondents using a structured questionnaire. Descriptive statistics and factor analysis were used to analyses the data. The findings reveal that Business Efficiency, Smart Services and AI factor are the major factors influencing tourism and hospitality business. In comparison with the other factors, Business efficiency is the most significant factor. It provides quick and useful information to tourists. However, businesses face challenges such as cost, lack of knowledge, and technical difficulties. Proper use of AI can improve customer satisfaction and business growth. This study helps to understand the effective use of AI for the development of tourism and hospitality businesses in Kanyakumari District.

Key words: Artificial Intelligence, Tourism, Hospitality, Personalized services

Introduction
Artificial Intelligence (AI) is emerging as an important technology in the tourism and hospitality industry. It is transforming the way tourism and hospitality businesses provide services, interact with customers, and manage their operations. AI enables businesses to analyse customer preferences, provide personalized services, improve decision-making, and increase operational efficiency.

In the tourism sector, AI is used for personalized travel recommendations, smart booking systems, chatbots, virtual assistants, digital marketing, demand forecasting, and customer service. These applications help tourists obtain quick and useful information and make travel planning more convenient. In the hospitality sector, AI supports hotel operations, customer relationship management, revenue management, and service delivery.

Kanyakumari District is an important tourist destination known for its beaches, religious places, historical attractions, and cultural heritage. The growth of tourism in the district creates opportunities for hotels, restaurants, travel agencies, and other tourism-related businesses to adopt modern technologies. The effective use of AI can help these businesses understand tourist needs, improve service quality, reduce operating costs, and enhance customer satisfaction.

At the same time, the adoption of AI may create challenges for tourism and hospitality businesses. High implementation costs, lack of technical knowledge, limited employee skills, data privacy concerns, and technological difficulties may affect the effective use of AI, particularly among small businesses.

Therefore, this study examines the role of Artificial Intelligence in tourism and hospitality businesses in Kanyakumari District. It focuses on the benefits, applications, and challenges of AI and identifies the major factors influencing its use in tourism and hospitality businesses. The study also provides suggestions for the effective adoption of AI to improve business efficiency, customer service, and sustainable tourism development in Kanyakumari District.

Review of Literature

- Pratima Gurjar (2024) studied the role of AI in the hotel industry. The study found that AI improves guest comfort, satisfaction, and hotel services. It also helps hotels remain competitive in the changing tourism industry.
- Dr. T. Milton (2023) studied the use of AI and modern technologies in tourism. The study found that AI, VR, drones, and biometric systems improve tourist experiences and business operations. It also supports sustainable and efficient tourism development.
- Pranav Anant Nagmote and Ashwini Garkhedkar (2026) reviewed the use of AI in e-tourism and smart tourism. The study found that AI makes tourism more convenient, personalized, and competitive. However, human interaction, trust, local culture, and service quality remain important

Objectives of the Study

- To understand the role of AI in tourism and hospitality businesses in Kanyakumari District.
- To study how AI helps improve customer service and travel planning.
- To identify the benefits of AI in managing tourism and hospitality businesses.
- To examine the use of AI in marketing and promoting tourist destinations.
- To identify the challenges faced by businesses in using AI.
- To suggest suitable ways to use AI for the growth of sustainable tourism in Kanyakumari District.

Statement Of the Problem

Artificial Intelligence (AI) is increasingly used in the tourism and hospitality industry to improve customer service, travel planning, booking, marketing, and business operations. AI helps businesses provide better services, save time, reduce costs and understand tourist needs.

Kanyakumari District is an important tourist destination where hotels, restaurants, travel agencies, and other tourism businesses can benefit from AI. However, businesses may face problems such as high cost, lack of knowledge, lack of skilled employees and technical difficulties in using AI.

Therefore, this study is undertaken to examine the role of Artificial Intelligence in tourism and hospitality businesses in Kanyakumari District. The study focuses on the benefits, uses, and challenges of AI and identifies the major factors that support the effective use of AI in tourism and hospitality businesses.

Methodology

- Research Design: Descriptive research design
- Study Area: Kanyakumari District
- Sample Size: 200 respondents
- Data Collection: Structured questionnaire
- Sampling: Convenient sampling
- Data Analysis: Percentage analysis and factor analysis
- Source of Data: Primary data

ANALYSIS OF DATA

The demographic characteristics of respondents are the important variables Role of Artificial Intelligence in tourism and hospitality business in Kanyakumari district. Demographic profiles of the respondents were classified according to their Gender, Age, Educational Qualification, Occupation, Monthly Income and residence.

Table 1

Demographic Profile

	Particulars	No of Respondents	Percentage
Gender	Male	125	62.55
	Female	75	37.5
	Total	**200**	**100.00**
Age	Below 30 years	75	37.65
	30 - 40 Years	50	25.00
	40 -50 Years	40	20.00
	Above 50 Years	35	17.50
	Total	**200**	**100.00**
Educational Qualification	Up to School Level	45	22.50
	Under Graduate	95	47.5
	Post Graduate	60	30.00
	Total	**200**	**100.00**
Occupation	Govt Employee	30	15.00
	Private Employee	105	52.5
	Self Employed	65	32.5
	Total Income	**200**	**100**
Monthly Income	Below 20,000	23	11.5
	20,000 - 40,000	51	25.5
	40,000- 60,000	56	28.00
	Above 60,000	70	35.00
	Total	**200**	**100**
Residence	Rural	54	27.00
	Urban	96	48.00
	Semi Urban	50	**25.00**
	Total	**200**	**100**

Source: Primary Data

The table shows that out of 200 respondents**,** 62.55% are male and 37.5**%** are female. The maximum number of respondents (37.65%) belongs to the Below 30 years age group. Majority of the respondents 52**.**5% are undergraduates. Among the occupations, 45.3% of the respondents are private employees**.** The majority of respondents (35.00%) have a monthly income between ₹Above 60,000. The Maximum number of respondents belongs to the urban category.

Key Aspects of Artificial Intelligence in tourism and hospitality business

Table 2

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.858
Bartlett's Test of Sphericity	Approx. Chi-Square	740.025
	Df	66
	Sig.	.000

Source: Primary Data

The relationship between the selected variables is explained through the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. In this study, the KMO value is 0.858, which indicates that the sample is adequate and suitable for factor analysis. The Bartlett's Test of Sphericity shows a Chi-square value of 740.025 with 66 degrees of freedom, and the significance value is 000. This confirms that there is a significant relationship among the variables and factor analysis is appropriate for this study. The factor analysis was carried out for the selected twelve variables related to Tourism and hospitality Business, and these variables were

grouped into major factors influencing Artificial Intelligence in tourism and hospitality business.

Table 3

Role of Artificial Intelligence in tourism and hospitality business in Kanyakumari district

Factors	Business Efficiency	Smart Services	AI Support
AI provides personalized services based on tourist preferences.	0.827		
AI helps businesses manage and analyze customer	0.725		
AI helps reduce operating costs in tourism and hospitality businesses.	0.720		
AI improves the management of hotel operations.	0.687		
AI helps businesses manage their revenue effectively.	0.666		
AI provides virtual assistance to tourists at any time.		0.651	
AI improves customer engagement in tourism and hospitality businesses.		0.648	
AI supports better decision-making in tourism and hospitality businesses.		0.639	
AI helps predict tourist demand accurately.8		0.634	
AI helps identify fraudulent activities in tourism businesses.		0.628	
AI helps tourists plan their trips efficiently.			0.574
AI supports better decision-making in tourism and hospitality businesses.			0.506

Source: Primary Data

Table 3 shows the rotated factor loadings for the 12 statements related to key aspects of Artificial Intelligence in tourism and hospitality business. It is clear from the table that all the 12 statements have been grouped into three major factors. These three factors together explain the important aspects influencing Artificial Intelligence in tourism and hospitality business.

The first factor," Business Efficiency" consists of five variables with high factor loadings: AI provides personalized services based on tourist preferences.(0.827), AI helps businesses manage and analyze customer (0.725),AI helps reduce operating costs in tourism and hospitality businesses.(0.720), AI improves the management of hotel operations. (0.687), and AI helps businesses manage their revenue effectively.(0.666).This factor focuses on the use of AI for enhancing business efficiency in tourism and hospitality.

The second factor "Smart Services "includes five variables AI provides virtual assistance to tourists at any time (0.651), AI improves customer engagement in tourism and hospitality businesses.(0.648),AI supports better decision-making in tourism and hospitality businesses (0.639), AI helps predict tourist demand accurately (0.634), and AI helps identify fraudulent activities in tourism businesses(0.628).This factor reflects the contribution of AI to smart, responsive, and secure services in the tourism and hospitality sector.

The third factor "AI Support" includes two variables: AI helps tourists plan their trips efficiently (0.574) and AI supports better decision-making in tourism and hospitality businesses. (0.506) .This factor reflects the importance of AI in supporting efficient trip planning and decision-making in the tourism and hospitality sector.

Overall, the factor analysis identified three major dimensions influencing Artificial Intelligence in tourism and hospitality Business. These factors indicate that Business Efficiency, smart services and AI support are the key determinants of tourism in hospitality business in Artificial Intelligence.

Table 4

Benefits of AI in Tourism and Hospitality Business

Component	No of Variable	Eigen Value	Percentage of Variance	Cumulative Percentage of Variance
Business Efficiency	5	4.565	38.045	38.045
Smart Services	5	1.191	9.925	47.97
AI Support	2	1.081	9.010	56.98

Source: Primary Data

Table 4 shows the major factors that determine Artificial Intelligence in tourism and hospitality business. The factor analysis identified three important components.

The first factor "Business Efficiency" has the highest Eigen value 4.565 and explains 38.045% of the total variance. This indicates that Business Efficiency is the major factor, highlighting the significant role of AI in improving business operations.

The second factor "Smart Services" has an Eigen value of 1.191 and contributes 9.925% of the variance. This highlights the importance of Smart Services in improving tourism and hospitality business operations through AI.

The third factor "AI Support", has an Eigen value of 1.081 and explains 9.010% of the variance. This reveals that AI Support contributes to the successful adoption and use of AI in tourism and hospitality businesses

Overall, the three extracted factors account for a substantial proportion of the total variance, indicating their strong influence on the adoption and use of artificial intelligence in tourism and hospitality businesses

Suggestions

1. Tourism and hospitality businesses should conduct regular training programmes to improve employees' knowledge and practical skills in using AI-based applications.
2. Hotels, travel agencies and other tourism businesses should use AI chatbots, virtual assistants and automated support systems to provide tourists with quick and continuous assistance.
3. AI-based systems should be used to understand tourist preferences and provide personalized recommendations for accommodation, destinations, travel plans and tourism services.
4. Tourism businesses should utilize AI-generated information and demand forecasts to support business planning, resource allocation, pricing and operational decisions.
5. Tourism businesses should adopt AI-supported digital marketing tools to identify potential tourists, develop

targeted promotional campaigns and promote the tourist attractions of Kanyakumari District.

6. Affordable and easy-to-use AI solutions should be promoted among small hotels, restaurants, travel agencies and other tourism-related businesses so that the cost of AI adoption does not become a major barrier.
7. Businesses using AI should establish appropriate measures to protect tourists' personal and financial information and ensure responsible handling of customer data.
8. Tourism and hospitality businesses should have access to technical guidance and support to overcome difficulties associated with implementing and maintaining AI-based systems.
9. AI should be used to support sustainable tourism practices through demand forecasting, efficient resource utilization, improved operational planning and better management of tourist services.
10. AI should complement rather than completely replace human interaction, particularly in hospitality services where personal attention and customer relationships remain important.

Conclusion

Artificial Intelligence plays an important role in the tourism and hospitality industry. AI helps businesses provide better services to tourists. It makes travel planning and booking easier and faster. AI helps businesses understand the needs and preferences of tourists. It supports marketing and promotion of tourist destinations. AI also improves business operations and efficiency. It provides quick and useful information to tourists. However, businesses face challenges such as cost, lack of knowledge, and technical difficulties. Proper use of AI can improve customer satisfaction and business growth. This study helps to understand the effective use of AI for the development of tourism and hospitality businesses in Kanyakumari District.

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