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Research Article

Future Potential Of Tourism Growth In Ladakh

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ABSTRACT

1. Introduction

The travel and tourism industry has undergone a remarkable evolution over the years, and one of the most profound changes has been the increasing integration of the sector with modern applications and tools such as Google Maps, GPS services, various search engines, AI-based language translator, online ratings, reviews and online booking. This transformation has not only shaped the way travel is planned and experienced but has also revolutionized the very essence of the industry itself. In the pre-internet era, travel agencies were the primary source of information, and travellers relied on brochures, guidebooks and recommendations from friends and family. Navigating unfamiliar destinations was often challenging, and maps were essential tools. However, the emergence of the internet in the late 20th century transformed the way we travel. Online booking platforms simplify the reservation process, offering a wide range of options. This marked a significant shift from the traditional travel agency model. With the proliferation of the internet, travellers now have access to the experiences and recommendations of others, enabling more informed decisions about accommodations, restaurants and activities. More recently, introducing applications such as Google Maps was pivotal in the travel industry's evolution. It provides travellers with accurate, real-time navigation, allowing them to explore new destinations confidently. Similarly, all mobile applications enhance the travel experience by offering on-the-go access to accommodation, dining and activity recommendations.

From revolutionizing industries to influencing policy-making, AI has a profound and emerging role globally. Its ability to augment human capabilities, enhance productivity, and unlock new opportunities across industries positions it as the driving force behind economic development.
Considering this pattern, artificial intelligence and machine learning have ushered a new era of travel personalisation. Businesses employ AI algorithms to make personalised travel, lodging, and experience recommendations based on each customer's preferences. Chatbots and virtual assistants improve customer service by instantly responding to questions from travellers. Artificial intelligence (AI) is a revolutionary technology that has quickly changed many elements of our lives and is still having a big impact on the world.

In the future, AI is likely to change the face of the travel and tourism industry further. It can transform various aspects of the tourism sector. Predictive analytics and AI-driven insights will offer travellers personalized itineraries, and AI chatbots will provide real-time assistance throughout the journey. Virtual and augmented reality technologies will enable virtual travel experiences and immersive destination previews. The sector will need to change to satisfy consumer expectations that are becoming more tech-savvy. Applications using artificial intelligence (AI) can assess user preferences and behaviours to generate personalised travel recommendations, including activities, hotels, and destinations. This improves the whole travel experience and helps the tourism industry flourish.
Artificial intelligence (AI)-driven chatbots and virtual assistants can improve customer service by offering real-time customer care, responding to questions, and helping travellers in many languages. For tourism-related businesses, AI can also help analyse vast amounts of data and help these businesses make data-driven decisions, such as pricing decisions and marketing campaigns. AI has the potential to contribute towards the

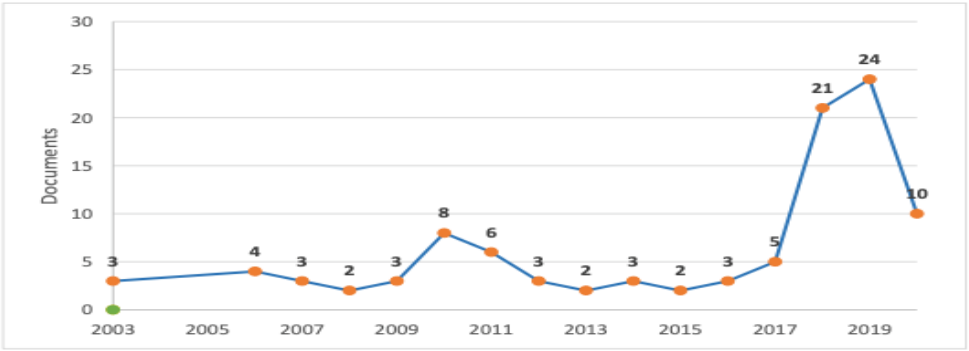
improvement of tourism infrastructure in maintaining hotels and transportation systems by predicting when equipment needs servicing, reducing downtime and enhancing visitor safety. One of the most important and handy tools is likely to be AI-powered translation tools, which break down language barriers, making it easier for tourists to communicate and navigate in the destination region. Tourists have already been using such services vastly, especially in the regions where English is not widely used. Such services are likely to evolve and improve further with the help of evolving AI technologies. In addition, AI can help tourism businesses identify potential customers, understand their preferences, and create targeted marketing campaigns to attract more visitors. AI can also be used for security purposes, such as facial recognition at airports and hotels, and to help detect fraudulent activities, essential for a safe and secure tourism industry. Additionally, AI-based services can also assist in managing environmental impact by optimizing energy consumption and waste management, thus contributing towards sustainable tourism practices. As technology continues to advance, the future holds tremendous possibilities for growth for AI-driven tourism, promising even more convenience, personalization, and sustainability in the world of travel.

2. Review of Literature

AI has ushered in the application of robotics in the hospitality industry, enhancing customer engagement within hotels and restaurants. AI aids tourists in discovering more pertinent information, thereby improving their decision-making processes and enhancing their overall tourism experiences, as outlined by Bulchand-Gidumal (2023). While the full potential of AI within the Tourism and Hospitality sector is yet to be fully realized, it is undeniable that machine intelligence has already made a substantial impact on this field, as noted by Ivanov et al. (2019) and Tussyadiah (2020). According to Buhalis et al. (2019) and Tussyadiah (2020), technology improvements have had a significant influence on the tourist and hospitality business. Many information and communication technologies have been adopted in the last 20 years to improve services, provide value, and improve the whole travel experience, including the pre-, during and post-trip phases. In all phases of a traveller's journey, ICTs are now widely integrated, as noted by Grundner and Neuhofer (2020). The advent of AI, which seamlessly integrates physical and online/virtual components, has further enhanced these ICTs. Together, these technologies have been essential in providing technology-enhanced travel experiences and tailoring visitor experiences (Grundner & Neuhofer, 2021).

Kirtil and Askun (2021) state that since 2017, there has been a notable increase in AI research in the travel and tourism sector. There has previously been relatively little discussion of this subject. The advancement of artificial intelligence and the internet has led to a growing quantity of research in this area.

FIGURE 1: GROWTH OF AI STUDIES IN TRAVEL AND TOURISM LITERATURE



Source: Kirtil and Askun, 2021.

The following review of the literature highlights the emergence of AI in the Travel and Tourism industry.

Zhang, L. and Sun, Z. (2019) argue that Artificial Intelligence and Internet of Things technologies have been booming in recent years due to the Internet's rapid progress. They argued that this has presented new difficulties for traditional industrial structures and operating strategies in several different areas. The impact of artificial intelligence has been revolutionary in many aspects of our lives, including travel, healthcare, education, manufacturing, and leisure. The paper explores the applications of AI in people's daily lives. It focuses primarily on how AI technology is expected to impact the tourist industry in the future in the study area of Jinan.

Almeida and Mar (2019) argue that despite the advances brought about by information technology and the internet, a new revolution in the tourism industry is anticipated with the introduction of robots, artificial intelligence, and virtual reality. The article argues that, even though these technologies are still in their infancy, several newly released studies in this area point to the possibility that artificial intelligence and machine learning could have a significant impact on the travel and tourism industry. Samala et. Al. (2020)

argues that artificial intelligence (AI) in the tourism sector facilitates smoother travel planning by offering automated, customised, and intelligent travel services. By providing AI with details about their interests, hobbies, and behaviours, travellers can get a tailored experience.

Grundner and Neuhofer (2020), in their study, the authors make the case that there has been a noticeable increase in interest in the use of digital technology in business. This research explores the idea of AI as a resource using a futures-oriented approach and a theoretical viewpoint based on the service-dominant (S-D) logic. In the context of tourism experiences, this model provides a comprehensive understanding of both the advantages and disadvantages of value generation using AI. It is a valuable tool for businesses planning to develop AI-enabled experiences for travel destinations and more extensive service settings in the future. Tussyadiah (2020) argue that future advancements in artificial intelligence (AI) and related technologies are expected to fuel an increase in the application of intelligent automation in the travel and tourist industry. This study promotes theory and practice by highlighting the need to establish an automated future for tourism as a social phenomenon and an economic activity. It also provides concepts for additional research in this area. Future research, according to the authors, should focus on four areas: developing AI that will be beneficial, promoting adoption, evaluating the effects of intelligent automation, and developing AI that will promote a sustainable future. Research initiatives in these fields will facilitate the methodical gathering of data, showcasing scientists' collaborative endeavours to guarantee the advantageous implementations of intelligent automation in the travel and tourism industry.

Mingling Li et al., 2021 talk about significant obstacles the hotel and tourist industry faces.
In order to investigate potential treatments, this study looked at the causes and consequences of these interactions between customers, employees, and artificial intelligence (AI) technology-based service interactions. The study identified four categories of AI-driven service interactions: encounters that are AI-generated, AI-mediated, AI-enhanced, and AI-facilitated. Carefully going over relevant material helped define these groups. Furthermore, the research produced a comprehensive model that describes the factors influencing AI-enhanced service interactions in a broader context and the following customer service outcomes. These findings have significant implications for the fields of service management and practical applications of AI.

According to Li and Di (2021), artificial intelligence has proliferated since the information technology age began and has found extensive applications across a wide range of fields, spurring innovation, change, and industrial advancement. This study looks at how artificial intelligence is used in the smart tourism sector in the study region of China. By extensively studying the limitations of smart tourism, the traditional tourist framework, and the integration of artificial intelligence within smart tourism, the study provides a deeper understanding of the current state of artificial intelligence products in the context of smart tourism. The 500 participant survey is used in the paper. The study's findings indicate that artificial intelligence tour guide goods are already well-developed and well-liked by the general population. In popular tourist locations, these goods are already frequently utilised.

The study by Cheriyan et al. (2022) examines several types of chatbots and how well they work in relation to the travel and tourism industry. The article looks at survey results to see if consumers in the travel and tourism industry are open to chatbots. Customers' reactions to AI-based chatbots and their usefulness and efficiency for the travel and tourism industry's clientele have been studied, according to a poll of IT professionals in Pune, India, who frequently utilise various online services to arrange their holidays. The majority of participants preferred using AI-enabled agents and believed that these agents assisted them with inquiries, problems, and customer service requirements when they were accessible across many platforms and apps. It was also discovered that they thought using these technologies could help them feel less anxious. However, most of them concluded that chatbots need to be more intelligent and always learn about new scenarios to provide customers with the best responses.

Du, P. and He, H (2022) studies to investigate the evolution of historical tourism sustainably, driven by artificial intelligence-based tourism practices. According to the authors, smart tourism is a forward-thinking paradigm for travel that meets the interests of corporations, governments, and the general public. It uses cutting-edge technologies like cloud computing, intelligent data mining, high-performance data processing, and the Internet of Things to improve guest experiences, industry expansion, and administrative administration, among other aspects of tourism. The crucial developments in the physical and informational tourist resources are the methodical integration and advancement. The study makes the case that artificial intelligence (AI) mimics and expands upon human intelligence functions, opening the door to novel uses.

Hui Lv & Si Shi (2022) conducted a study utilising 270 pertinent papers in response to the increased focus on big data and artificial intelligence in the field of hospitality and tourism research. The paper first identifies the types of big data used and the application of artificial intelligence in big data usage in hospitality and

tourism research. This allows the reader to understand better the main themes of big data and artificial intelligence research in existing literature, including forecasting, industry development, marketing, performance analysis, consumer behaviours and attitudes.

Knani et al. (2022), in their study, use a bibliometric method to assess the present level of AI research in the travel and hospitality industries. A total of 1035 research articles published between 1984 and 2021 were collected. This study examines authors, related countries and institutions, authorship networks, co-occurrences of keywords, and keyword networks in addition to emphasising the expanding body of research. It also includes a thematic map that classifies research into four categories: specialised and peripheral themes like forecasting tourism models, augmented reality, virtual reality, and biometrics; fundamental and cross-cutting themes like text mining, sentiment analysis, Internet of Things, big data, COVID, and AI; and emerging themes like service robot experience. The study highlights the changing role of AI in the tourism sector. It makes the case that it will continue to influence how the travel and hospitality industries develop in the future.

Dang and Nguyen's (2023) research findings illustrate how digital technologies—AI, Metaverse, and associated breakthroughs, in particular—significantly improve value co-creation by making travel experiences more efficient, personalised, and immersive. Research findings demonstrate how technology may be used to improve travel experiences while considering ethical issues. From a management standpoint, digital technologies and artificial intelligence (AI) can boost industry performance by facilitating better consumer interactions. The study identifies three significant areas of concentration for future research, managerial, intellectual, and technical, as a foundation for further investigation. These career paths present excellent opportunities for skill and knowledge development, opening the door to potentially revolutionary shifts in the travel and hospitality industries.

Miguel-Angel Garcia-Madurga and Ana-Julia Grillo-Mendez, 2023 in their study, aim to produce a thorough synthesis of the body of research on artificial intelligence as it relates to tourism. The paper argues that AI technology is rapidly reshaping many industries, including tourism. It improves customer service, streamlining operational processes, customises travel experiences, and supports sustainable practices. The study used the 'overview of reviews' methodology, which involves assessment and synthesis of the findings from articles. It found and examined 31 earlier review publications that addressed AI's application in the tourist industry. The combination of these assessments provides a comprehensive overview of the state of AI technology in today's travel and tourism sector. This thorough perspective offers insightful information to academic scholars looking to further this field of study and industry practitioners considering AI solutions.

Bulchand-Gidumal (2023) aids in understanding how artificial intelligence affects organizational operations and enables us to make the necessary preparations to boost revenue. This study investigates how artificial intelligence (AI) is affecting hotel marketing using questionnaire-based surveys, focus groups, and in-depth interviews. The results show ten patterns of AI's impact on hotel marketing. AI reengineers internal processes and procedures by empowering the augmented worker, allowing data and information to act as competitive catalysts, and executing mass personalization and customisation. AI also affects stakeholder interactions by regulating legal and ethical issues related to data use, enhancing sustainability, and figuring out return on investment. AI benefits the networks to which the companies belong by concentrating and integrating organisations and modifying distribution strategies. Artificial intelligence (AI) is revolutionising customer processes and services through smart and predictive customer care and predictive and enhanced product and service design. The study sheds light on the changes that artificial intelligence (AI) is expected to bring to the marketing of hospitality and tourism, which creates a research agenda and conversation starters for academics and industry practitioners.

According to Doğan & Niyet (2024), chatbots, automated procedures, and improved security measures have all contributed to increased efficiency and improved passenger experiences through tailored recommendations. The capacity of artificial intelligence to examine vast amounts of data can be utilised by tourism businesses to optimise their marketing campaigns and arrive at well-informed conclusions. It provides customised and individualised recommendations for travel locations, lodging, things to do, and restaurants. It makes the whole trip more enjoyable.

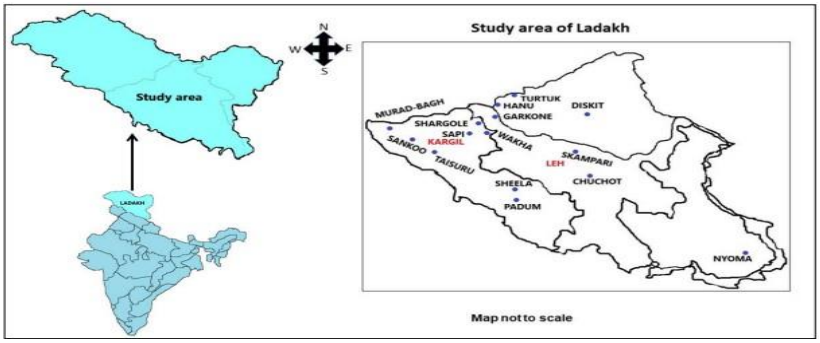
The study by Ku and Chen (2024) examines how tourism organisations use innovative services powered by artificial intelligence to make their customers happy. The partial least squares (PLS-SEM) approach assessed the research framework based on feelings and the socio-technical system perspective. In 2022 and 2023, information was gathered from a particular set of nations. The study results show that new product and AI innovation benefits greatly increase functional benefits, resulting in higher visitor satisfaction and a higher probability that they will use AI services in the future. On the other hand, it appears that neither excellent user experience nor perceived anthropomorphism had any moderating effect. This study argues that artificial

intelligence (AI) has practical implications and makes smart recommendations for travel agencies looking to use AI technology to boost client happiness.

3. Study Area

Ladakh, a Himalayan region in the northernmost part of India, has emerged as a promising tourist destination. This culturally rich region, often called the "Land of High Passes," has captivated the imaginations of travellers and adventurers for years. The fast rate of tourist inflow in recent times has contributed immensely to the economic well-being of the people of this region.

FIGURE 2: STUDY AREA



Several key trends are fuelling Ladakh's growing popularity as a tourist destination. Some of the improving trends have been improved accessibility, rising interest in adventure tourism, cultural experiences, sustainable tourism practices, and increasing government initiatives.

4. Objectives of the Study

The objective of this study is to explore the usage, perceived scope, satisfaction derived, security challenges, and perceived future potential of AI and smart tourism applications from the tourist's point of view. It will also find the impact of AI usage, scope, and security concerns on tourism satisfaction and the impact of this satisfaction on AI's future potential in the growth of the tourism sector of Ladakh.

5. Hypothesis

The paper attempts to understand the impact of AI usage and its scopepe of AI on the level of satisfaction of tourists visiting the study area.

Null Hypothesis 1 (H1): There is no significant positive impact of the Usage of AI on the level of satisfaction derived from visiting the destination.

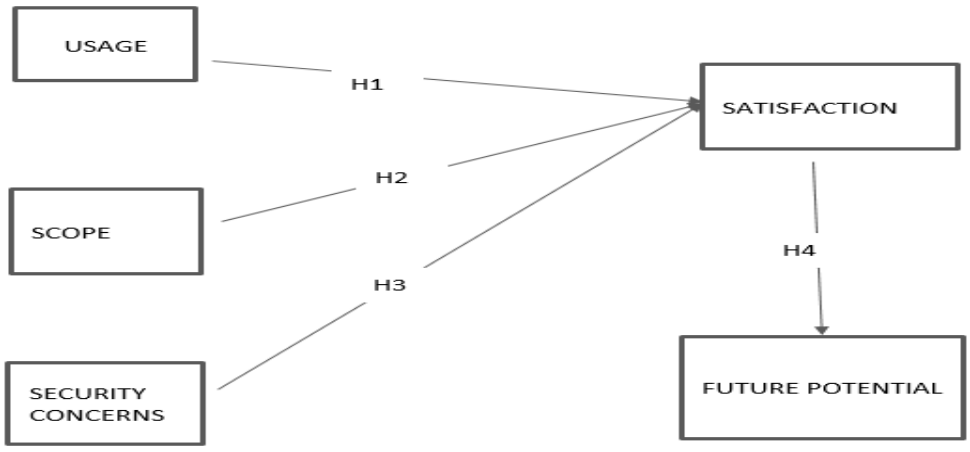
Null Hypothesis 2 (H2): There is no significant positive impact of the perceived scope of AI on the level of satisfaction derived from visiting the destination.

Null Hypothesis 3 (H3): There is no significant negative impact of perceived challenges on the level of satisfaction derived from visiting the destination.

Null Hypothesis 4 (H4): The level of satisfaction derived from visiting the destination has no significant positive impact on the future potential of AI-based tourism in Ladakh.

The Hypothesised model is depicted in the figure below.

FIGURE 3: PROPOSED MODEL OF INTERLINKAGES BETWEEN THE LATENT CONTRUCTS



6. Data and Methodology

The study surveyed 110 tourists from the two tourist destinations of Leh district, namely Nubra region and Leh city. Tourists were sampled using the convenience sampling technique, as is done in most tourist surveys. Questions were asked based on a five-pointa five-point Likert Scale ranging from 1-Strongly Disagree to 5-Strongly Agree to analyse and assess the tourist's perspective on the use, scope, challenges, tourist satisfaction and future potential of AI in tourism.
Descriptive statistics have been used to understand the usage, satisfaction, and potential of AI in the tourism sector from a tourist perspective. In order to understand the interlinkages between various factors, Exploratory Factor Analysis using Principal Component Analysis and Varimax rotation has been used. This is followed by a confirmatory factor analysis, which is conducted along with the requisite fit indices for convergent and discriminant validity. The result section presents the path diagram presenting the Structural Equation Model of the constructs measuring usage, scope, challenges, satisfaction derived from visiting the destination and future potential of AI.

7. Results and Discussions

Table no. 1 given below presents an overview of the respondents' demographic profile and number of travel days. Out of the 110 tourists surveyed, they mostly belonged to the age group 35 to 44 years. Educational qualification ranges from 'high school and below' to 'above PG', and the majority of the respondents surveyed were graduates, followed by 'high school or below' and 'Post Graduate'. About 87 per cent of the respondents were married, and 50 per cent were male. Nearly 41 per cent of the respondents travel about once a year, and about 36 per cent of the people travel about once in a couple of months. A major 68 per cent of the surveyed respondents visited Ladakh for 5 to 7 days, followed by 3 to 5 days and 7 to 14 days.

TABLE 1: DEMOGRAPHIC PROFILE OF RESPONDENTS

AGE	**Frequency**	**Per cent**
18 TO 24	2	1.8
25 TO 34	22	20.0
35 TO 44	35	31.8
45 TO 54	28	25.5
55 TO 64	16	14.5
65 AND ABOVE	7	6.4
Total	110	100.0
GENDER	**Frequency**	**Per cent**
MALE	55	50
FEMALE	55	50
Total	50	100.0
EDUCATIONAL QUALIFICATION	**Frequency**	**Per cent**
HIGH SCHOOL OR BELOW	32	29.1
GRADUATE	37	33.6
PG	31	28.2
ABOVE PG	10	9.1
Total	110	100
MARITAL STATUS	**Frequency**	**Per cent**
MARRIED	96	87.3
UNMARRIED	14	12.7
Total	110	100
HOW OFTEN DO YOU TRAVEL	**Frequency**	**Per cent**
FIRST TIME TRAVELLER	18	16.4
ONCE IN A COUPLE OF YEARS	40	36.4
ONCE IN A YEAR	45	40.9
TWO TO THREE TIMES IN A YEAR	7	6.4
Total	110	100
DURATION OF TRAVEL	**Frequency**	**Per cent**
3 TO 5 DAYS	18	16.4
5 TO 7 DAYS	75	68.2
7 TO 14 DAYS	14	12.7
14 DAYS TO 1 MONTH	3	2.7
Total	110	100

The table below presents highlights of the tourist perspective on the usage, importance and potential of Artificial Intelligence and similar related internet-based applications such as Google Maps, GPS-based riding

or driving, language translators, chatbots, reviews and rating-based selection and recommendations of hotels, restaurants and destinations and so on. In addition to the information gathered from the dataset, the field notes give some interesting glimpses of tourists' usage of AI. During data collection, almost all tourists have some basic idea of such services and agree to use such services in some form or another, even though many do not seem to understand the term 'Artificial Intelligence' as such. Many tourists need to use advanced AI-based tools and techniques. Most tourists agree on using services of travel recommendations based on reviews and ratings, language translators and GPS-based driving or riding.

Principal Component Analysis and Varimax Rotation were used in an exploratory factor analysis to establish constructs on the "usage," "scope," "security," "satisfaction," and "future potential" of AI in the tourism sector. The analysis was done from the viewpoint of the tourists. The requirement for minimal factor loading was established at 0.50. To guarantee appropriate levels of explanation, the communality of the scale—which represents the degree of variance in each dimension—was also evaluated. According to the preliminary findings, every communality was higher than 0.70. Weighting the correlation matrix's overall significance using Barlett's Test of Sphericity—which yields a statistical probability estimate for the correlation matrix's significant correlation among some of the item's components—was a crucial step in the process. The results demonstrated their eligibility for factor analysis, with a significant Chi Sq value of 4230.87 with df 300 and a significant p-value of 0.000. The data were deemed suitable for factor analysis based on the Kaiser-Meyer-Olkin measure of sampling adequacy (MSA), which came out at 0.896. Data values greater than 0.8 are suitable for factor analysis in this context. Five components were identified from this study utilising eigenvalue criteria, and these factors collectively explained 87.7% of the variation in the data.

The following table represents the initial descriptive statistics, where items have been measured using a Five-Point Likert Scale from 1 to 5, where 1 stands for Strongly Disagree and 5 stands for Strongly Agree.

TABLE 3: DESCRIPTIVE STATISTICS

ITEMS	**MEAN**	**STD DEV OF SCALES**	**N**
USE_DURNG	2.31	0.843	110
USE_BFR	2.22	0.669	110
US_AFTER	2.45	0.774	110
USE_RST	2.3	0.841	110
USE_RVW	2.17	0.728	110
USE_MAPS	2.27	0.834	110
USE_HTSPT	2.22	0.817	110
INFORMTN	2.59	0.625	110
IMPRTNT	2.59	0.64	110
TIME_SAVE	2.56	0.657	110
EFFRT_SAVE	2.63	0.619	110
EASY	2.56	0.628	110
ACCSBL	2.59	0.625	110
RLBLTY	2.64	0.602	110
ACCURATE	2.65	0.597	110
SAFE_PERSONAL_INFO	1.28	0.472	110
SAFE PAYMENT	1.34	0.494	110
SAFE_DATA	1.28	0.472	110
HAPPY	3.45	0.786	110
SATIFCTN	3.46	0.809	110
PREFER_LADAKH	2.43	0.566	110
RECOMMEND	3.45	0.82	110
TRNSFM	2.93	0.832	110
GRWOTH_POTENTIAL	2.95	0.822	110
JOB POTENTIAL	2.9	0.801	110
KMO AND BARLETT'S TEST RESULTS			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.896
Bartlett's Test of Sphericity	Approx. Chi-Square		4230.878
	df		300
	Sig.		0

Based on the Exploratory Factor Analysis results presented below, five significant factors have been retained in the model. The total variance explained table shows that these five factors account for 87.729 per cent of the total variation. The first factor generated is named Scope, and it contains eight items; the second factor is named usage and is explained by seven items; ; thefour items measure the third construct measures satisfaction fourth construct measures the perceived future potential of AI in the growth of tourism sector in Ladakh which is named 'Future Potential' and is measured by three items and lastly, security has been measured by three items.

TABLE 4: ROTATED COMPONENT MATRIX

	FACTORS				
ITEMS	**SCOPE**	**USAGE**	**SATISFACTION**	**PERCEIVED FUTURE POTENTIAL**	**SECURITY**
EFFRT_SAVE	0.911				
ACCSBL	0.911				
INFORMTN	0.906				
USE_RVW		0.817			
US_AFTER		0.787			
USE_MAPS		0.777	IMPRTNT	0.905	
USE_BFR		0.748	ACCURATE	0.882	
USE_HTSPT		0.638	EASY	0.881	
HAPPY			RLBLTY	0.872	
RECOMMEND			TIME_SAVE	0.744	
SATIFCTN			USE_DURNG		0.863
PREFER_LADAKH			USE_RST		0.818
GRWOTH_POTENTIAL				0.925	
TRNSFM				0.925	
JOB POTENTIAL				0.917	
SAFE_PERSONAL_INFO					0.857
SAFE_DATA					0.81
SAFE PAYMENT					0.76
Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					

- **Measurement Model Analysis**

Confirmatory Factor Analysis and Structural Equation Model with Path Analysis were performed using IBM AMOS 24. The model run has the following model fit measures:

TABLE NO. 5: Model Fit Indices

Measure	Estimate	Threshold	Interpretation
CMIN	656.776	--	--
DF	261	--	--
CMIN/DF	2.516	Between 1 and 3	Excellent
CFI	0.908	>0.95	Acceptable
SRMR	0.102	<0.08	The value should be less than 0.08
RMSEA	0.118	<0.10	It should be less than 0.10 for a mediocre fit
TLI	0.9	>0.9	Acceptable
NFI DELTA1	0.858	>0.5	Acceptable
PNFI	0.746	>0.5	Acceptable
PCFI	0.79	>0.5	Acceptable

The above table shows that most of the model's criteria are acceptable except for SRMR and RMSEA, which are slightly over 0.1. These two model fit indices are a slight concern with the model's fitness, but other than that, the model has an excellent fit if we go by CMIN/DF, and the model falls in an acceptable range as per the cutoff criteria of TLI, CFI, NFI, PNFI, and PCFI. As a result, we can conclude that the model fits the data well overall.

Validity Concerns and Standardized Regression Weights:

To measure Construct Validity, Average Variance Extracted (AVE) and Construct Reliabilities (CR) have been calculated.

AVE for SCOPE is 0.786, USE is 0.642, and SECURITY is 0.813. A commonly used rule of thumb is that an AVE value above 0.50 is considered indicative of good convergent validity. This suggests that the underlying construct captures more than 50% of the variance in each indicator. Given these values, all three exogenous constructs have reasonable convergent validity, as they are above the 0.50 threshold. Additionally, for all items, factor loading is also higher than 0.6, which is also a good indicator of convergent validity.

Composite Reliability for SCOPE is 0.96, USE is 0.93, and SECURITY is 0.81. The CR values are well above 0.7, indicating good convergent validity of the model.

Discriminant validity can be seen using the square root of AVE for each construct. It should be greater than 0.05 for each construct for discriminant validity, and in our model, they are well above 0.7, so there are no validity concerns with this model.

TABLE 6: STANDARDISED REGRESSION WEIGHTS AND VALIDITY CONCERNS

ITEMS		CONSTRUCTS	Estimate	AVE	CR	Cronbach's Alpha	MSV	MaxR(H)
USE_HTSPT	<---	USE	0.852	0.642	0.932	0.949	0.448	0.953
USE_MAPS	<---		0.9					
USE_RVW	<---		0.889					
USE_RST	<---		0.84					
US_AFTER	<---		0.776					
USE_BFR	<---		0.784					
USE_DURNG	<---		0.89					
ACCURATE	<---	SCOPE	0.865	0.786	0.969	0.981	0.291	0.995
RLBLTY	<---		0.889					
ACCSBL	<---		0.982					
EASY	<---		0.964					
EFFRT_SAVE	<---		0.955					
TIME_SAVE	<---		0.801					
IMPRTNT	<---		0.974					
INFORMATION	<---		0.996					
SAFETY_DATA	<---	SECURITY	0.888	0.592	0.813	0.907	0.448	0.974
SAFE PAYMENT	<---		0.78					
SAFE_PERSONAL_INFO	<---		0.985					
HAPPY	<---	SATISFACTION	0.933	na	na	0.962	na	na
SATIFCTN	<---		0.944					
PREFER_LADAKH	<---		0.927					
RECOMMEND	<---		0.948					
TRNSFM	<---	FUTURE_POTENTIAL	1.001	na	na	0.97	na	na
GRWOTH_POTENTIAL	<---		0.951					
JOBPOTENTIAL	<---		0.966					

Standardised regression weights:

Standardised Regression Weights of Factors			Estimates
SATISFACTION	<---	USE	0.313
SATISFACTION	<---	SCOPE	0.387
SATISFACTION	<---	SECURITY	0.01
FUTURE_POTENTIAL	<---	SATISFACTION	0.455

8. Findings

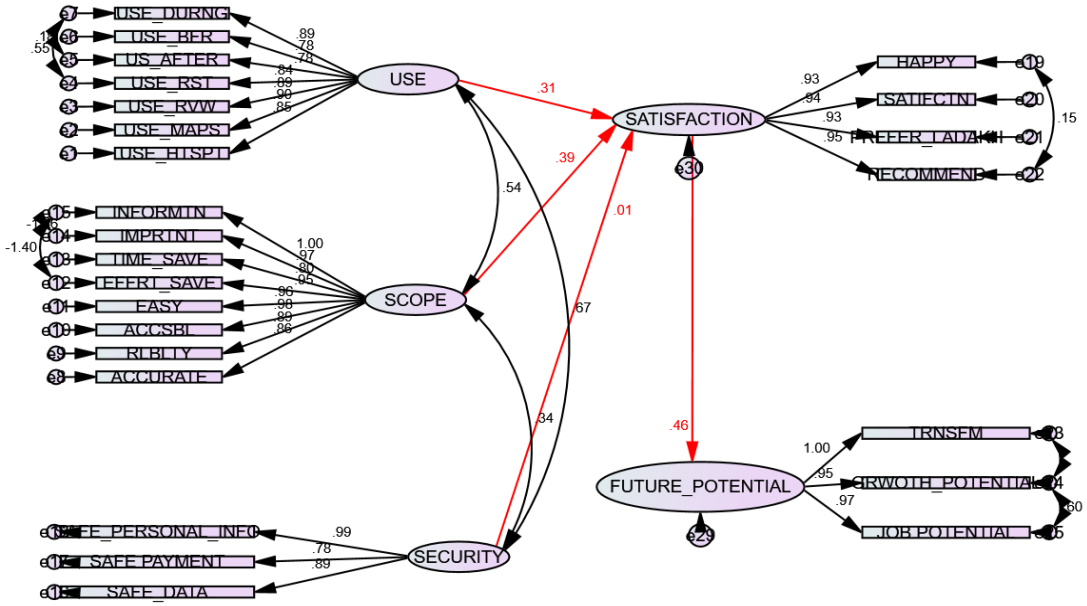
Path analysis, as presented in the table below, shows that we successfully rejected the null hypothesis H1 with a five per cent level of significance. This means that the use of AI services and related smart tourism applications has a positive and significant impact on the level of satisfaction derived from the destination. Secondly, we successfully reject the null hypothesis H2, which means that the perceived scope of AI services and smart tourism applications (as perceived by the tourists) positively and significantly impacts the satisfaction level. Thirdly, we fail to reject the null hypothesis H3 and thus cannot say that security concerns with the use of AI services in the form of data security and leakage of personal information have any significant negative impact on the level of satisfaction of tourists. Lastly, we successfully reject the null

hypothesis H4, which implies that the level of satisfaction derived from visiting the destination that has been impacted by the use of AI and related applications has a positive impact on the perceived future potential of the use of AI in the tourism industry. Thus, improved usage and proper exploitation of AI services by the tourism industry will lead to enhancing the growth potential of the tourism sector of Ladakh as perceived by the tourists visiting the destination.

TABLE 7: REGRESSION ESTIMATES

Path			Estimate	S.E.	Critical Ratio	P value	Result
SATISFACTION	<---	USE	0.329	0.133	2.479	0.013	Hypothesis (H1) supported: Rejected null hypothesis at 5 per cent significance level.
SATISFACTION	<---	SCOPE	0.55	0.136	4.042	***	Hypothesis (H2) supported: Rejected null hypothesis at 1 per cent level of significance.
SATISFACTION	<---	SECURITY	0.018	0.191	0.096	0.924	Hypothesis (H3) not supported: We failed to reject the null hypothesis
FUTURE_POTENTIAL	<---	SATISFACTION	0.518	0.101	5.147	***	Hypothesis (H4) supported: Rejected null hypothesis at 1 per cent significance level.

FIGURE 4: SEM MODEL OUTPUT



The path coefficients presented in the model are the standardised regression weights, showing that our independent constructs significantly impact the dependent constructs. The results indicate that the use of AI and smart tourism applications in the tourism sector leads to a higher level of satisfaction derived from a destination, and it also gives the tourists the opinion of the better growth potential of AI in the tourism sector. Thus, we may conclude by saying that improvement in these services, especially in making such services reach more users, can certainly lead towards increasing the future potential of AI in the tourism sector and can contribute towards the growth and income of locals.

9. Conclusion

This paper clarifies tourists' views on the use of AI services in the tourism context. It shows that a significant percentage of people indicate that they would be willing to employ these services both before and during their travels. The paper also draws attention to respondents' common worries about privacy and data security. The main goals of the study were to find out how AI is being adopted, how tourists feel about AI and smart tourism applications, what security concerns people have about using AI, and how these things affect tourists' satisfaction at travel destinations. The study used structural equation modelling (SEM), confirmatory factor analysis (CFA), and exploratory factor analysis (EFA) to investigate these linkages, and the results showed a reasonable model fit. The validity and reliability of latent constructs were confirmed by

tests aimed at evaluating their convergent and discriminant validity. All of the elements loaded under their respective constructs showed positive and significant relationships, according to the analysis. The study also explored how tourist happiness affects the perception of AI adoption in the tourism industry going forward. The encouraging findings highlighted the positive and significant effects of AI usage and its perceived scope on satisfaction levels. Furthermore, it was shown that contentment was a strong predictor of how the tourism industry will see AI's future viability, indicating that technology may help spur sectoral growth. In conclusion, the findings highlight how critical it is to handle security issues while utilising AI's potential to improve visitor experiences. Additionally, they highlight how important satisfaction is in determining how AI will be used in the tourism industry going forward and indicate areas where it may be strategically integrated to support business growth.

10. Implications

The following are some of the consequences of this study for scholars and policymakers, as well as for different stakeholders in the tourist industry:

1. Professionals in the Tourism Sector:
When developing and implementing AI-driven solutions to improve visitor experiences, industry practitioners can benefit from insights about how willing tourists are to accept these services. By being aware of privacy and data security concerns, practitioners may put strong policies and procedures in place to allay people's fears and build tourist confidence.
2. Policy Makers: Using the research results, policymakers can create rules and policies that control AI usage in the travel and tourist industry, guaranteeing its moral and responsible application while defending the rights of customers and their privacy. Legislators may be persuaded to provide incentives for investments in AI infrastructure and technology by recognising the benefits of AI use on visitor pleasure, which could spur economic growth.

3. Destination Management Organisations (DMOs): By customising destination offers and marketing strategies, DMOs may increase competitiveness and draw in tech-savvy tourists. They can do this by utilising insights about tourists' preferences and perceptions of AI.
By ensuring travellers have data protection safeguards and presenting places as safe and reliable, destination management strategies can address security concerns.

4. Academic Researchers: Future studies examining related subjects at the nexus of AI and tourism can make use of the approaches used in this work, such as EFA, CFA, and SEM.
To gain further insights and add to the body of knowledge on this subject, future research can focus on certain features found in this study, such as the subtleties of security issues or the efficacy of AI applications in various tourism situations.

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APPENDIX: ITEM DETAILS

CONSTRUCTS	ITEMS
USAGE	USE_DURING: While travelling in Ladakh, I use AI and smart technologies.
	USE_BFR: Before going to Ladakh, I planned my tour using internet based applications, AI and similar smart technologies.
	USE_AFTER: I intend to use internet-based tools, AI or similar tools for reviews and ratings related to my travel to Ladakh.
	USE_RESTAURANT: While travelling in Ladakh, I use AI and smart technologies to visit restaurants.
	USE_REVIEW: While travelling in Ladakh, I look for reviews using AI and smart technologies.
	USE_MAPS: While travelling in Ladakh, I use internet-based maps for travelling.
	USE_HTSHPT: To select specific tourist hotspot, I use AI and smart technology while travelling in Ladakh.
SCOPE	INFORMATION: AI and smart technologies gave me a lot of information during this travel to Ladakh.
	IMPRTNT: AI and smart technologies gives essential information for travelers.
	TIME_SAVE: AI and smart technologies saves my time during travelling.
	EFFRT_SAVE: AI and smart technologies saves my effort while travelling.
	EASY: While travelling in Ladakh, it is easier to use AI and smart technology for information rather than asking people around.
	ACCSBL: AI and smart technologies are accessible in places I visited in Ladakh.
	RLBLTY: The information received from AI and smart technologies are reliable while traveling in Ladakh.
	ACCURATE: The information received from AI and smart technologies are accurate while traveling in

	Ladakh.
SECURITY	SAFE_PERSONAL_INFO: my personal information is safe while using AI and Smart technologies during my travel to Ladakh
	SAFE_PAYMENT: I feel safe while making payment via mobile banking, internet-based application and smart technologies during my visit to Ladakh.
	SAFE_DATA: overall my data is safe while using AI during travel.
SATISFACTION	HAPPY: I feel happy visiting Ladakh.
	SATISFCTN: I am satisfied visiting Ladakh.
	PREFER_LADAKH: I prefer Ladakh to many other destinations.
	RECOMMEND: I would recommend Ladakh to people.
FUTURE_POTENTIAL	TRNSFM: AI and Smart technologies has the potential to transform the travel and tourism industry of Ladakh.
	GROWTH_POTENTIAL: AI has the potential to increase the economic growth of Ladakh.
	JOB_POTENTIAL: Use of AI and Smart technologies can positively influence the inflow of tourists to Ladakh which can increase job creation in tourism sector of Ladakh.