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A Psychological Approach to Promote Climate Change and Sustainable Economic Development Using Information and Communication based Application

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ABSTRACT

Background: This study aims to evaluate the current condition of ecotourism in North India in light of the effects of climate change, balance the benefits and drawbacks of implementing more eco-friendly regulations, and highlight innovative new strategies. To find areas of unresolved study and possible future research topics, three papers were evaluated. In this research, the management of ecotourism was examined from the standpoint of a specific place in relation to the use of information and communication technology (ICT). It underlines the opportunity for destination management to utilise ICT to promote sustainable tourism development and offers a summary of a number of ICT-based tools and applications that might be used by destination managers.

Method: The study involves the collection of primary data through a survey of 125 tourists in North India.

Conclusion: There is awareness among the majority of respondents that sustainable tourism practices can mitigate the impact of climate change in the region. There is a clear need for further education and awareness-raising initiatives to decrease the effects of climate change via sustainable tourism, although respondents demonstrated knowledge with current trends and best practises in green tourism. The survey also revealed different priorities&interests among stakeholders in implementing sustainable tourism practices.

Keywords: Green Tourism, Climate Change, Sustainable Economic Development

1. Introduction

A vital industry, tourism contributes significantly to the global economic expansion&development of nations. Yet it also significantly affects the environment, particularly in light of climate change. A sizable portion of the greenhouse gas emissions that contribute to climate change&its detrimental effects on ecosystems&communities are caused by the tourist sector (Sharpley, R. 2021). In recent years, there has been an increase in public awareness of the need for sustainable tourism practises that decrease the impact of tourism on the environment while yet encouraging economic development.(Azam, M., & Sarker, T. 2013). The globe is currently going through a period of transition brought on by environmental crises&vulnerabilities,&it is critical for scientists&decision-makers as well as the long-term survival of the earth system that sustainability be maintained in all development activities. Many people have come to the conclusion that the historically recurring economic cycles of boom and bust may have come to an end as a result of the continuous era of economic prosperity experienced by industrialised countries in recent years (Bramwell, & Lane, 2009).

Although significant debates (Agyeiwaah, E., et al. 2017), outside pressure, and country-based sustainability campaigns are influencing policy-makers to rethink initiatives within the framework of a green economy, developing and emerging economies are primarily related to financial development despite the pressures of climate change.Opportunities founded on sustainable principles may generate a better platform for issue-solving efforts in commercial enterprises, manufacturing,&consumption rather than additional opportunities causing crises.

North India is a well-liked travel destination for both local&foreign tourists since it has a rich cultural&natural legacy. Yet, the area also deals with a variety of environmental issues, including air pollution, a lack of freshwater,&climate change. In this regard, it's crucial to find&promote eco-friendly tourist strategies that can support long-term economic growth while reducing environmental problems (Azam, M., & Sarker, T. 2013). This study aims to analyse the potential advantages and obstacles of adopting sustainable tourist practises in North India by identifying existing trends and best practises in green tourism within the context of climate change. This research intends to shed light on the existing situation of sustainable tourism in Northern India by conducting a thorough literature analysis and collecting original data.

By achieving these objectives, this study seeks to contribute to the development of a sustainable tourism industry in North India that balances economic growth with environmental sustainability. The study's results will be of interest to anyone in the tourist sector who are working to advance sustainable development in the area, including business and government owners.

ICT and its role in sustainable development

Information and communication technologies are required in order to compete in the global economy, improve access to key services, and provide opportunities for local prosperity. The promotion of economic growth, economic cooperation, and development is dependent on the integration of ICT into the economic and social fabric, according to study by the Organisation for Cooperation and Economic growth (OCDE). Online commerce is purportedly being driven by the tourism sector. Through a range of tools and services, ICT's main goal is to give the World Wide Web greater purpose and enable commercial organisations to transact widely over the network. This is due to the fact that the Internet serves as a fundamental and crucial foundation for the implementation of the spread of applications for information and communication technology. We may tailor solutions to specific institution needs by picking and choosing from a wide range of available technological resources. According to Castells (2000), "in such an age, a development that is carried/or conducted without the Internet looks like doing manufacturing without electricity."

2. Literature Review

As a result of the information and communications technology (ICT) revolution, modern business in general and many individual companies have been profoundly impacted. Information and communication technologies have had an influence on organisations in a number of ways, including making it easier for employees to communicate with each other and with customers, increasing sales, and providing a solid foundation for marketing efforts. It goes without saying that the widespread use of ICTs has also had an impact on the travel sector. In fact, the literature generally agrees on this point. The tourist business is being slowly transformed by a number of important advances in ICT, as noted by Buhalis and O'Connor (2005). With the help of eTourism and the Internet in particular, the traditional methods of creating, managing, and selling tourist goods and destinations have been completely rethought. They proved that eTourism's future would centre on customer-oriented innovations to better meet the needs of today's discerning travellers. This means that the 'info structure for tourist organisations to handle internal activities must be developed using agile methodologies at both the strategic and tactical management levels.

In their 2010 discussion of the topic, S. Ramaswamy, & Sathis Kumar, G. (2010) place a strong emphasis on the value of sustainable ecotourism in fostering environmental sustainability. Scholars draw attention to the major negative environmental effects of tourism, such as increased pollution, waste production,&harm to natural habitats. According to the report, the conventional tourist strategy, which places a higher priority on economic growth than on environmental conservation, is no longer long-term viable. As a substitute tourist strategy that is concentrated on community involvement, environmental sustainability,&cultural preservation, the study

suggests sustainable eco-tourism. The main tenets of sustainable eco-tourism are covered by the writers, including reducing environmental effects, encouraging community engagement,&fostering cross-cultural interchange. The protection of cultural&natural heritage, the advancement of environmental education,&the development of environmental consciousness are only a few of the possible advantages of sustainable eco-tourism that have been highlighted by researchers. The relevance of sustainable eco-tourism as a way of fostering environmental sustainability&sustainable economic development is persuasively argued for by Ramaswamy&Sathis Kumar (2010). For governments, travel companies,&other tourism sector stakeholders who are interested in encouraging sustainable tourism practices, the paper offers a helpful approach.

Sørensen, F., & Grindsted, T. S. (2021). examines the connection between sustainability strategies&the growth of nature tourism with an emphasis on the function of stakeholders&the effects of various sustainability strategies. In the research, several sustainability strategies, such as environmental management systems, certification programs,&sustainability standards, are briefly discussed. Nevertheless, they also point out that these methods may be expensive&time-consuming,&small-scale nature tourism businesses may not always be able to implement them.

Sørensen&Grindsted's (2021) summary of the many sustainability strategies that may be used for the growth of nature tourism is helpful. They also discuss the function of stakeholders in supporting sustainable tourism practices. The research provides information for policymakers&stakeholders who are interested in encouraging sustainable nature tourism development&sheds light on its potential&the problems faced by operators of nature tourism.

Shedenov et al. (2019):The study evaluates the prospects&problems facing the growth of ecological tourism in Kazakhstan with a particular focus on that nation. An outline of ecological tourism's potential to advance long-term economic growth is provided by the researcher. The authors contend that ecotourism may support economic development for nearby communities while simultaneously advancing environmental preservation&protection. The paper examines the prospects&difficulties facing the growth of ecological tourism by focusing on the particular instance of Kazakhstan. They explore the necessity for laws&policies that promote the growth of ecotourism&emphasize the need for stakeholder involvement in fostering sustainable tourism practices. The creation of environmental reserves&the promotion of eco-friendly tourist strategies are only two examples of the authors' successful ecological tourism projects in Kazakhstan. They contend that these projects show the potential for ecotourism to support the nation's sustainable economic growth. A helpful explanation of the idea of ecological tourism&how it could support long-term economic growth is given by Shedenov et al. (2019). The paper gives insights into Kazakhstan's unique situation&offers direction for stakeholders&policymakers that are interested in fostering ecological tourism in the nation.

Objective

The study has the following objectives

- To identify the significant variables in green tourism.
- To assess the impact ofgreen tourismon variables like climate change&economic development.
- To adopt a model for improving tourist services promoting green tourism

3.Methodology

The research is descriptive in nature. In order to comprehend the potential advantages and limitations of sustainable tourist practises, as well as to identify existing trends in green tourism in North India, a thorough literature analysis was conducted. A survey was conducted to gather data on current practices&perceptions of stakeholders involved in the tourism industry in North India. A total of 125 respondents were contacted through online mediums. The survey questions were designed to obtain information on their knowledge, attitudes,&behaviours related to sustainable tourism practices.Statistical methods such as mean, standard deviation, and advanced SPSS were used to examine the data.

4.Data Analysis

4.1.2 Green Tourism

Cronbach's alpha for the 'Green Tourism' scale is .845, indicating that the instrument is very reliable. Moreover, it pointed to a high degree of internal consistency within the given sample.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.845	.840	20

Sources: Table generated by the author

Table 4.6: - Reliability Statistics

From the table, we concluded that descriptive statistics explained the mean, standard deviation,&the number of individual questions about green tourism.

Item Statistics			
	Mean	Std. Deviation	N
Q_GT_01	4.0400	1.22079	125
Q_GT_02	3.7920	.98616	125
Q_GT_03	4.1040	.82133	125
Q_GT_04	4.2160	.92965	125
Q_GT_05	4.1920	.83951	125
Q_GT_06	4.0160	.89788	125
Q_GT_07	4.0400	.89262	125
Q_GT_08	4.0240	1.10325	125
Q_GT_09	4.0160	1.02378	125
Q_GT_10	4.0800	.89443	125
Q_GT_11	4.0400	.99515	125
Q_GT_12	3.9760	.98754	125
Q_GT_13	3.8320	1.07565	125
Q_GT_14	4.2320	.89023	125
Q_GT_15	4.1200	.81913	125
Q_GT_16	4.1440	.90433	125
Q_GT_17	4.0480	.96600	125
Q_GT_18	4.0400	1.01917	125
Q_GT_19	4.0480	.96600	125
Q_GT_20	4.0320	.88842	125

Sources: Table generated by the author

Table 4.7: - Items Statistics

If the KMO score is below.50, it's not sufficient; ideally, it should be over.70. The KMO test reveals whether or not sufficient data points can be attributed to each element. It's a respectable.791 around here. If the variables are strongly correlated, as they are required for a factor analysis (in this example, of 'green tourism'), then the Bartlett test will be significant (i.e., have a significance level of less than.05).

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.791
Bartlett's Test of Sphericity	Approx. Chi-Square	721.164
	df	190
	Sig.	.000

Sources: Table generated by the author

Table 4.8: - KMO&Bartlett's Test

Before rotation, the relationship across the variable and all other variables is represented by these baseline communalities (the squared multiple correlations across the item and all other items).The factors obtained have captured the similarities that reveal the extent of the variables' variation. In order to proceed with the analysis, the communality value must be greater than 0.5. If not, we need to leave them out of the factor analysis altogether. There was one variable which had less than 0.5 extraction values.

Communalities		
	Initial	Extraction
Q_GT_01	1.000	.790
Q_GT_02	1.000	.571
Q_GT_03	1.000	.618
Q_GT_04	1.000	.695
Q_GT_05	1.000	.606
Q_GT_06	1.000	.461
Q_GT_07	1.000	.589
Q_GT_08	1.000	.614
Q_GT_09	1.000	.704
Q_GT_10	1.000	.642
Q_GT_11	1.000	.703
Q_GT_12	1.000	.581
Q_GT_13	1.000	.766
Q_GT_14	1.000	.651
Q_GT_15	1.000	.669
Q_GT_16	1.000	.682
Q_GT_17	1.000	.812
Q_GT_18	1.000	.510
Q_GT_19	1.000	.658
Q_GT_20	1.000	.775
Extraction Method: Principal Component Analysis.		

Sources: Table generated by the author

Table 4.9: - Communalities

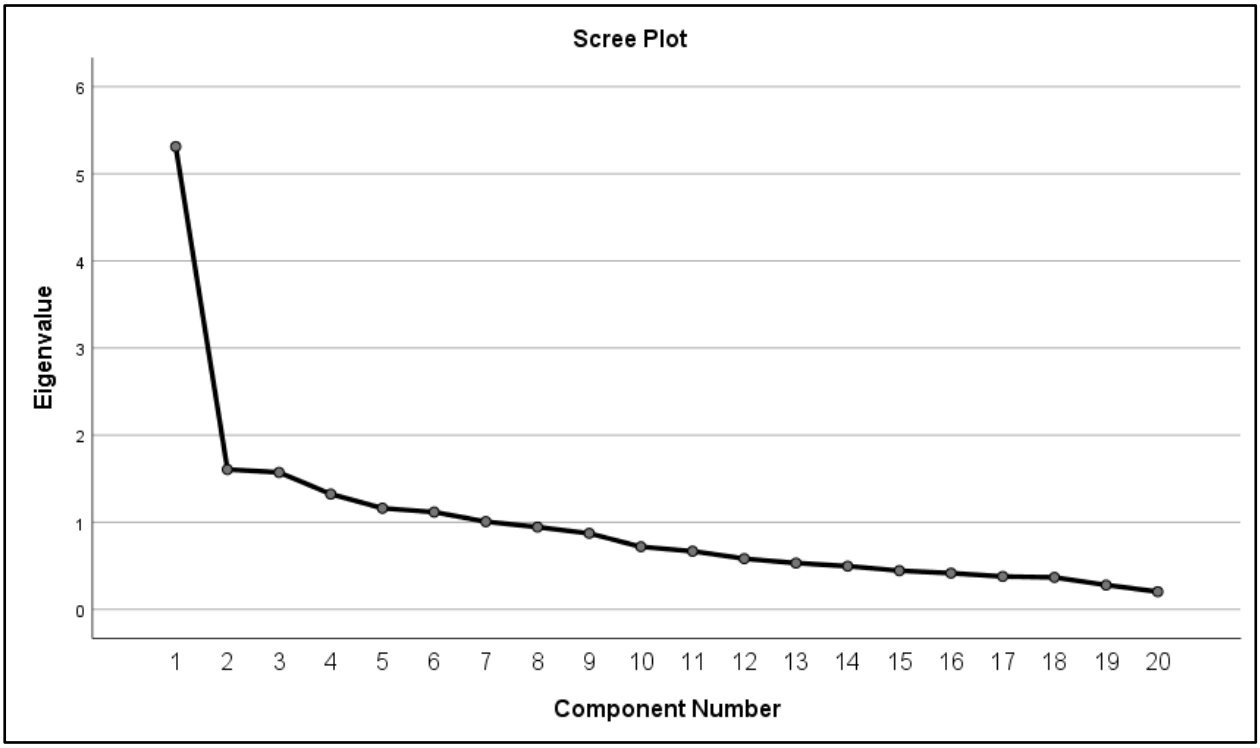
The elements that contribute to the variation are broken out in the Total Variation Explanation table. Keep in mind that a standard requirement for a helpful factor is that its eigenvalue (a gauge of the explained variance) be larger than 1.0, which 7 of the factors do. Whenever the eigenvalue is below one, the factor has less explanatory power than the original item did.The eigenvalue is determined to guarantee that the sum of all recovered factors is equal to the initial number of items.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

1	5.312	26.561	26.561	5.312	26.561	26.561	2.534	12.671	12.671
2	1.606	8.030	34.591	1.606	8.030	34.591	2.266	11.331	24.002
3	1.572	7.862	42.453	1.572	7.862	42.453	2.121	10.603	34.605
4	1.323	6.615	49.068	1.323	6.615	49.068	1.843	9.214	43.818
5	1.161	5.804	54.872	1.161	5.804	54.872	1.635	8.177	51.996
6	1.116	5.582	60.454	1.116	5.582	60.454	1.351	6.755	58.751
7	1.007	5.035	65.490	1.007	5.035	65.490	1.348	6.739	65.490
8	.945	4.725	70.215						
9	.873	4.364	74.578						
10	.719	3.595	78.173						
11	.668	3.338	81.511						
12	.582	2.909	84.420						
13	.532	2.658	87.078						
14	.496	2.482	89.560						
15	.445	2.223	91.783						
16	.416	2.078	93.861						
17	.378	1.888	95.749						
18	.368	1.839	97.588						
19	.279	1.397	98.985						
20	.203	1.015	100.000						
Extraction Method: Principal Component Analysis.									

Sources: Table generated by the author

Table 4.10: - Total Variance Explained



Sources: Table generated by the author

Figure 4.11: - Scree plot

Rotation is used to lessen the overall amount of factors that determine whether the variables of interest have significant loadings. Aside from simplifying the study, rotation has no discernible effect. There were six variables in Component 1 having a correlation value greater than 0.5, and four variables in Component 2.

Rotated Component Matrix							
	Component						
	1	2	3	4	5	6	7
Q_GT_09	.770						
Q_GT_03	.606		.376				
Q_GT_15	.598				.482		
Q_GT_08	.568	.361	.307				
Q_GT_01	.552	.360	.407				
Q_GT_18	.464	.375					
Q_GT_07		.653					.375
Q_GT_06		.650					
Q_GT_12		.533	.309	.303			
Q_GT_13		.521			.483	.465	
Q_GT_02		.446			.313		
Q_GT_11			.825				
Q_GT_10			.600		.371		
Q_GT_19	.375		.566	-.322			
Q_GT_05				.736			
Q_GT_04				.701			
Q_GT_16					.754		
Q_GT_14				.323	.444	-.424	
Q_GT_20						.848	
Q_GT_17							.862
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 16 iterations.							

Sources: Table generated by the author

Table 4.12: - Rotated Component Matrix

4.2 Hypothesis Testing

4.2.1 There is a significant relation between variables of green tourism.

Descriptive Statistics Analysis describes the mean, standard deviation,&the number of variables of green tourism.

Descriptive Statistics

	Mean	**Std. Deviation**	**N**
Local tourism	4.0573	.70269	125
Climate change	3.9312	.62481	125
Sustainable infrastructure	4.0560	.70804	125
Long term economic development	4.1440	.46775	125

Sources: Table generated by the author

Table 4.13: - Descriptive Statistics

The significance of associations between green tourism factors was calculated using Pearson's correlation coefficient (coeff.). There is a statistically significant (p =0.005) 0.319 to 0.591 Pearson correlation between the two variables. The alternative hypothesis, that green tourism factors are significantly related, was thus accepted.

Correlations

		Local tourism	Climate change	Sustainable infrastructure	Long term economic development
Local tourism	Pearson Correlation	1	.591	.437	.536
	Sig.(2-tailed)		.000	.000	.000
	N	125	125	125	125
Climate Change	Pearson Correlation	.591	1	.319	.531
	Sig.(2-tailed)	.000		.000	.000
	N	125	125	125	125
Sustainable infrastructure	Pearson Correlation	.437	.319	1	.353
	Sig.(2-tailed)	.000	.000		.000
	N	125	125	125	125
Long term economic development	Pearson Correlation	.536**	.531	.353**	1
	Sig.(2-tailed)	.000	.000	.000	
	N	125	125	125	125
**Correlation is significant at the 0.01 level (2-tailed)					

Sources: Table generated by the author

Table 4.14: - Correlations

4.2.2 There is a significant impact on Local tourism of green tourism.

Descriptive Statistics Analysis describes the mean, standard deviation,&the number of factors of local tourism of green tourism.

Descriptive Statistics			
	Mean	Std. Deviation	N
Local tourism	3.6492	.82555	125
Green_Tourism_1	4.0573	.70269	125

Sources: Table generated by the author

Table 4.15: -Descriptive Statistics

The R-value of 0.256 for a simple correlation indicates a very high degree of association between the two variables. The R2 number represents the extent to which green tourism may affect the climate of a destination. In this case, 6 % can be explained, which is large. This shows the climate change effects on local tourism. This checks whether the population-level unstandardised (or standard) coeff.s are equivalent to zero. The coeff.s are distinct in statistical terms from 0 (zero) if and only if p >.05. The t-value and the associated p-value are denoted, respectively, by the symbols "t" and "Sig."The change showed the significance of p-value Local tourism of green tourism. It is explored from the research study that local people&tourists are both following green tourism practices to mitigate the effect of climate change.

4.2.3 There is a significant impact of green tourism on climate change

Descriptive statistics Analysis describes the mean, standard deviation,&the number of variables of green tourism in climate change.

High levels of correlation are indicated by a high R-value (the simple correlation) of 0.317. The R^2 value demonstrates the extent to which the climatic change of green tourism explains the entire variance in the alterations in local management. In this case, 10.0% can be explained, which is large.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.317[a]	.100	.093	.78627

a. Predictors: (Constant), climate change

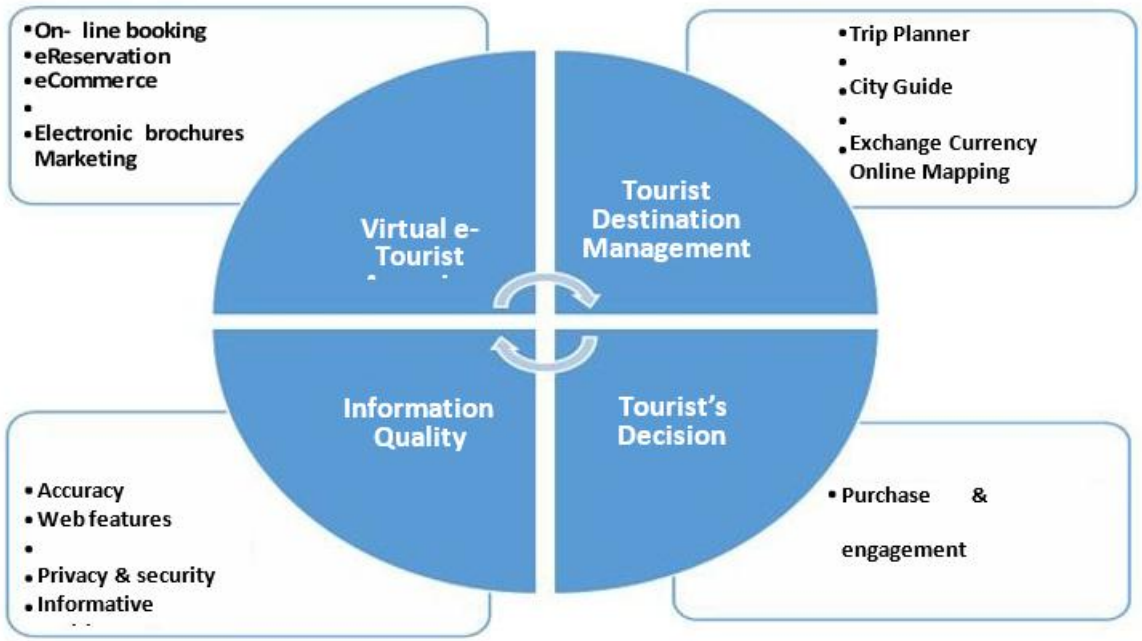
Sources: Table generated by the author

Table 4.17: -Model Summary

Whether or not the whole model of regression fits the data is determined by the F-ratio within the ANOVA table. F (1, 123) = 0.0001, p .05 (i.e., the regression model is an adequate fit for the data) reveals that the dependent variable can be predicted with high accuracy by the independent variables.The t-value and associated p-value are included in the columns labelled "t" and "Sig," respectively. Climate change's impact on ecotourism's p-value is now clear.

The population's unstandardised (or standard) coeff.s are tested for equality with 0. The coeff.s are distinct in statistical terms from 0 (zero) if and only if p >.05. The "t" and "Sig" columns, respectively, provide the t-value and the related p-value. The p-value of climate change on eco-tourism became apparent.

This analysis&hypothesis testing shows that all the hypotheses are accepted. All the variables are positively correlated.



The proposed eTourism model

eTourism is a group of services provided by information and communication technology for the completion and marketing of tourist services and hotels across multiple networks, in accordance with the concepts and tenets of e-commerce. In actuality, the word extends to include electronic device tourism, such as mobile phone travel (known as "m-tourism"). Thus, ICTs have been used to build and develop tourism entities that need visitors with a specific level of technical competence.

Conclusion

At the conclusion of the study, it was discovered that both visitors and local entrepreneurs in north India had a solid understanding of green and sustainable tourism.People understand the importance of sustainable tourism on the economic development of tourist places&the same in mitigating the effect of climate change. In conclusion, this analysis provided visions into the concept of Green Tourism&its related variables. The reliability analysis demonstrated the consistency of the measuring instrument, while descriptive statistics provided an overview of individual questions. The factor analysis identified underlying factors&hypothesis testing confirmed significant relationships&impacts. These findings contribute to the understanding of Green Tourism&can inform future research&practices in sustainable tourism.

The tourist business can always benefit from the development of new ICT-based technologies. As a consequence of its encouragement of two-way communication between tourism businesses and customers, it helps in the production, administration, and promotion of tourist services. The current state of Algeria's tourist industry has been analysed, and suggestions for future sustainable development have been made in this article. Algerian travel businesses are making significant investments and tapping into the industry's untapped potential by using information and communication technologies (ICT). Using ICT, travel businesses may have complete two-way interactions with visitors by delivering personalised content, facilitating eBook purchases, and accepting payments online. Internet-based tourism services are helpful for travellers and allow them to better plan their vacations. The ICT that allows organisations to focus on their profitability via a network of connections will thus be at the centre of eTourism's future, opening up new opportunities and giving travel agencies a huge advantage. There will be significant changes in the tourist sector as a result of ICT, including:

- eTourism will replace the more common kind of tourism.
- eBook purchases and online hotel reservations will grow in popularity among tourists.
- The future of tourist advertising lies in the use of interactive media.
- Webcasts and electronic brochures will grab travellers' interest and encourage them to plan trips to the attractions they saw in real time.
- ICTs will enable the sale of tourism-related products online

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