

# The Role of ICT in Protecting the Environment in Sustainable Tourism (Case Study Mussoorie, India)

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**Abstract**—Sustainable development is a process of change where the use of resources, the of investments, the orientation of technology and institutional change are all in harmony and enhance both current and future potential to meet the needs and aspirations of individuals Furthermore Reorientation of technology was a critical objective for environment and development policies No doubt before any planning towards sustainable tourism in the region, we need to know the current situation in that region In order to do research, we chose the beautiful area and good weather Mussoorie, India, because this region to establish sustainable tourism, has high potential. In this study, according to the research objectives, are the right tools to measure the standard questionnaire to collect data needed to evaluate hypotheses have been used for this purpose we have prepared two types of questionnaires from two different statistical community that includes 89 local people and 50 expert management..to select a sample, random sampling method is used in this research as the methods of data analysis in proportion to described and analyzed variables- indices based on regional rural analysis methods; and software techniques of SPSS used. Tourism led by technology and communications has an important role in achieving sustainable tourism. Respect for the principles of sustainable tourism and environmental protection makes local people feel safe. In fact, the no migration of indigenous peoples and achieve sustainable tourism and environmental protection are interdependent and their positive feedback on encapsulation.

**Keywords:** environment, migration, Sustainable Tourism, Information and communication technologies

## 1. INTRODUCTION

Sustainable Development was first defined by the World Commission on Environment and Development, called Brundtland Report in 1987 as “development, which meets the needs of the present without compromising the ability of future generations to meet their own needs.” Five basic principles were identified: the idea of holistic planning and strategy making; the importance of preserving essential ecological processes; the need to protect both human heritage and biodiversity; to develop in such a way that productivity can be sustained over the long term for future generations; achieving a better balance of fairness and opportunities between nations.

The pursuit of sustainable development is much more than just minimizing the environmental impacts of economic

development. It calls upon a new approach to development planning whereby the full costs and benefits of these three elements are taken into account and fully integrated into the planning process from the start. Sustained economic growth and quality of life is dependent upon the quality of the environment. Whilst economic growth itself leads to increased production and consumption, more efficient use of environmental resources and a reduced reliance on waste and emissions is required. While economic development and social prosperity have traditionally been the focus of development planning, the challenge now is to integrate these closely with environmental enhancement and protection.

## ICT and Sustainable Tourism

The growing demand by consumers for timely and accurate information relevant to their needs is equally matched by the growing awareness of issues related to resource use and management, community access and equity. Though these are not defined by consumers as ‘sustainability issues’ per se, the environmental dimension seems to resonate more with consumers. As far as tourism is concerned, Dodds et al. (2010) suggest that it is often a destination’s environment that may initially attract a visitor and this is perhaps why expressions of concern about the environment dominate. Arguably, it depends on the destination and type of holiday. Another way to assess the environmental bias is to give credit to the success of social marketing. However, in many cases awareness about the issues related to sustainability have done very little to change consumer behavior (Swarbrooke and Horner 2007) More recently, researchers are recognizing the potential of ICT to support sustainable tourism. Seminal work by Ali (2009) identified a number of ICT-based applications that could enhance sustainable tourism. Identified tools included economic impact software; geographical information systems; weather, climate and ocean change forecasting software; destination management systems; and community informatics. However, these tools /applications looked at the opportunity of applying these technologies from the perspective of the destination management organization (DMO). A total of sixteen (16) distinct ICT tools/applications were identified which served to address the needs by the destination

management organization for information management, tourist satisfaction, interpretation, enabling partnerships, community participation and energy consumption (Ali 2009).

## 2. HYPOTHESES

### Research objectives

- 1) To explain a meaningful relationship between Sustainable tourism and environmental protection
- 2) To explain a meaningful relationship between Tourist guide with information and communication technology and Obtaining sustainable tourism
- 3) To explain a meaningful relationship between Improving information and communication technology in the region and Prevent migration of indigenous peoples to protect the environment
- 4) To explain a meaningful relationship between Sustainable Tourism and Prevent migration of indigenous people.

## 3. RESEARCH QUESTIONS

- 1) There is a meaningful relationship between Sustainable tourism and environmental protection?
- 2) There is a meaningful relationship between Tourist guide with information and communication technology and Obtaining sustainable tourism?
- 3) There is a meaningful relationship between Improving information and communication technology in the region and Prevent migration of indigenous peoples to protect the environment ?
- 4) There is a meaningful relationship between Sustainable Tourism and Prevent migration of indigenous people?

### Research hypotheses

- 1) Is there any meaningful relationship between Sustainable tourism and environmental protection.
- 2) Is there any meaningful relationship between Tourist guide with information and communication technology and Obtaining sustainable tourism
- 3) Is there any meaningful relationship between Improving information and communication technology in the region and Prevent migration of indigenous peoples to protect the environment
- 4) Is there any meaningful relationship between Sustainable Tourism and Prevent migration of indigenous people.

## 4. RESEARCH METHODS

### Means and tools of measuring

In this research, considering the purposes of the research, suitable tools of measurement which are standard questionnaires have been used to collect the required data to examine the research hypotheses.

### Methods and techniques of collecting data

In this research a combination of expansive (library) and perceptive (field) methods of collecting data is used because of the essence of the issue, in one hand, and the descriptive-analysis method used in the research, on the other hand.

### Method of data analysis

Well-known methods of assessing sustainability and perceptual statistics (such as correlation and statistical analysis) are used in this research as the methods of data analysis in proportion to described and analyzed variables-indices based on regional rural analysis methods; and software techniques of SPSS.

### Study limitations include restrictions controlled

Research on indigenous areas

- 1) The study is limited to the area of tourism **Mussoorie, India**
- 2) The evaluation criteria for the evaluation of the questionnaires.

### Restrictions uncontrollable in questionnaire:

- 1) The results of the questionnaire is debatable.
- 2) The impact of emotions and personal interpretations of questioner by respondents to the survey results there.

## 5. RESULTS

### Characteristics of the respondents

#### Respondents native

- Gender breakdown shows that 69 % of respondents indigenous respondents were male and 16 % female and about 14.9 percent were unanswered.
- As a result of the age of the Aboriginal highest frequency in the range of twenty-five to thirty- five years.
- The vast majority of respondents are self-employed (as farmers and ranchers were taken apart ) These jobs include grocery, Real Estate, drivers and so on.

#### Respondents Expert

- The result of the separation of gender experts shows that 66% of respondents were male, 32 % are women and the rest did not answer the question.
- The result of the age, experts suggest. The highest frequency in the range of over 35S years.
- The results of education experts, shows that 78 % of respondents have a doctoral degree and 22 % have a master's degree.

### The analytical review of the results of the local communities

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WECD 1987 p. 23). Two key concepts were emphasized - the concept of needs, with priority being placed on the world's poor and “the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs” (WCED 1987 p. 43). The role of technology is an important concept in sustainable development that this researcher has observed, has largely been downplayed by the academic and professional community. Similarly, the more all-encompassing information and communications technology, is still a relatively new area in the tourism literature and its use for sustainable tourism is considered an under-researched area (Ali 2009).

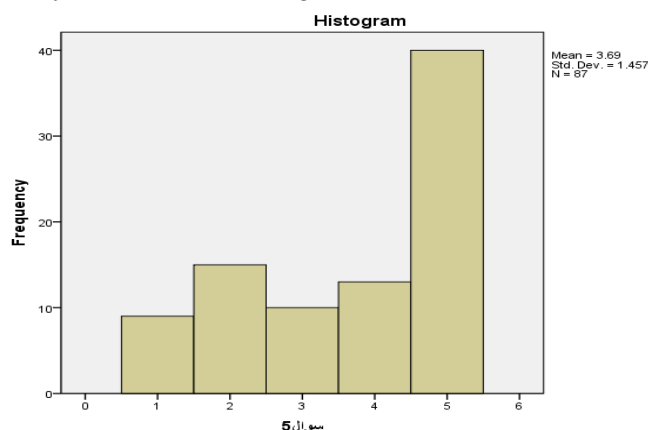
- According to the above, In this section, we examine whether the conditions for life to the extent provided Aboriginal people, to prevent them from migrating to the big cities.
- For this purpose, at first we asked : Do they tend to migrate ? And that Which of the factors encouraging immigration, the native knows?
- **Binomial test**

	Category	Number	Ratio observed	Ratio test	Significant level
Group 1	$\leq 3$	55	.6	.6	.309
Group 2	$> 3$	32	.4		
Total		87	1.0		

$H_0$ : I do not want to migrate

$H_1$ : I am willing to migration

- Due to the significant level of more than 5%,  $H_0$  is not rejected, the desire to migrate is low.



- The table and graph show that indigenous people, unwillingness to emigrate and Most of those who have a tendency to migrate. The desire to progress or continue their education, due to their migration.

Given the importance of environmental protection to sustainable tourism, the next question about climate change during the past 15 years.

- Is has changed, the environment around where you live, the last 15 years ?

	Category	Number	Ratio observed	Ratio test	Significant level
Group 1	$\leq 3$	38	.4	.6	.002 <sup>a</sup>
Group 2	$> 3$	49	.6		
Total		87	1.0		

a. Alternative hypothesis states that the proportion of cases in the first group  $<.6$ .

$H_0$  :  $P > 0.6$  The environment has not changed much over the past 15 years.

$H_1$  :  $P < 0.6$  The environment has changed much over the past 15 years.

- Due to the significant level of more than 5%,  $H_0$  is rejected, so The environment has changed much over the past 15 years.
- **Descriptive results of the survey research experts**
- In this section we want to know the opinion of experts About Tourism led by technology and information technology towards sustainable tourism.
- We want our research that if tourism is to be guided by sustainable tourism will still negative consequences on the environment.

Statistics				
	Number	Average	Standard deviation	Standard error of estimate
Education	56	2.9286	.44710	.05975

Test						
	The test					
	T-statistics	Degrees of freedom	The significance level	The average difference between the number 3	95% confidence interval for the difference	
					Lower limit	Upper limit
Education	-1.196	55	.237	-.07143	-.1912	.0483

H<sub>0</sub>: Between sustainable tourism and its negative consequences on the environment, there is no significant relationship.

H<sub>1</sub>: Between sustainable tourism and its negative consequences on the environment, there is significant relationship

*Because Lower limit is negative and Upper limit is positive, so between sustainable tourism and its negative consequences on the environment, there is no significant relationship.*

## 6. CONCLUSIONS

Tourism led by technology and communications has an important role in achieving sustainable tourism. Respect for the principles of sustainable tourism and environmental protection makes local people feel safe. A sense of job security and higher quality of life, preventing the migration of indigenous people. In fact, the no migration of indigenous peoples and achieve sustainable tourism and environmental protection are interdependent and their positive feedback on encapsulation.

Sustainable tourism is a positive approach intended to reduce the tensions and friction created by the complex interactions between the tourism industry, visitors, the environment and the communities which are host to holidaymakers. It is an approach which involves working for the long-term viability and quality of both natural and human resources .holistic planning and strategy-making; the importance of preserving ecological processes; the need to protect human heritage and biodiversity and to develop in a manner where productivity could be sustained over the long term for future generations.

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