

# Application of Web-Based Geographical Information System (GIS) in Tourism Development

**Somnath Chaudhuri**

*Royal Thimphu College, Bhutan*

**Nilanjan Ray**

*Royal Thimphu College, Bhutan*

## INTRODUCTION

Tourism is defined by the World Tourism Organisation (NSCB, 2004), as the act travelling for the purpose of recreation and the provision of services for this act. Currently, tourism industry is one of the fastest growing industries all over the world. This smokeless industry is basically a kind of service industry, as it renders service to the tourists and all other supporting industries related to tourism like, hotel industry, transport industry etc. This business involves many socio-economic activities like promotion and advertising tourist spots and destinations, providing effective transport facility, fooding-lodging, entertainment, etc. At the same time when the tourism industry is flourishing it helps in socio-economic development of those tourist destinations. It also helps in strengthening the economical status of the country by earning foreign currencies without exporting national wealth. So, it is obvious that if this industry becomes more effective and efficient, it will definitely be the major source of revenue and will take a leading role in the overall economic development of the nation. Information and Communication Technology (ICT) can lead tourism to emerge as a new mantra for alternative economic development (Buhalis, 1998). Information Technology breaks the geographical boundaries so it is shared to the global audiences. Information Technology integrates between tourism product and requirement of the tourists. Due to changes in tourists or visitors behavior, the tourism market is becoming more segmented with each potential tourist belonging to a number of market segments (Cheng & Piccoli, 2002). Tourist operators need to be aware of these changes and be equipped

to respond or better still, take a proactive approach. Technological revolution during 1990s brought with it new opportunities and challenges for the tourism industries. Technology has become fundamental to the ability of the global tourism industry to operate effectively and competitively. Information technology is being rapidly diffused throughout the tourism industry and that no player will escape from information technologies impacts. These technological innovations started in the 1970s when the main airlines set up CRSs (Computerized Reservation Systems), with the strategic aim of building a global distribution network for their products. Connecting travel agencies to the CRSs set off a process of distribution automation involving an ever-increasing number of tour operators, carriers, and car hire firms, individual hotels, hotel chains, and other hospitality firms.

## OBJECTIVES OF THE STUDY

This present study seeks to the application of Web-Based Geographical Information System (GIS), an ICT tool for tourism promotion particularly through Internet, with a future plan to develop this type of promotion by implementing GIS tools for tourism, GIS data design and collection, database design management and application of tourism analysis and problem solving. In the context of tourism management this present study penetrates the usage of GIS to disseminate maximum level of information for tourism promotion. It discusses how this modern ICT system is used for collecting and analyzing the tourism information for the efficient and effective management and promotion of tourism.

DOI: 10.4018/978-1-4666-5888-2.ch692

## BACKGROUND OF THE STUDY

*Geographic Information System* is one of the most popular ICT tools for capturing, storing, retrieving, manipulating, mapping and analyzing spatial and non-spatial geographical data in the digital format. GIS is the information system that provides functions including visual 3D presentations about any geographical locations, advanced analysis etc. of digital geospatial information by processing them in an integrated manner.

GIS technology integrates common database operations, such as storage of data, retrieval through query and converting those data to information through statistical analysis. GIS manages region-based information and provides tools for depiction and analysis of various statistics, including population density, economic development, transport facility, types of vegetation etc. GIS helps us to store the detailed information of any region in the databases and maps to create dynamic displays. Additionally, it provides tools to convert and display raw data in the form of 3D maps, run any query, and overlay those databases in ways which is not possible with traditional spreadsheets. These special-efficient as well as effective abilities distinguish GIS from other information systems, and make it one of the

most effective ICT tool to a wide range of public and private enterprises for elucidation of events, predicting outcomes, and scheduling strategies. The United States Geological Survey (USGS) defined “*GIS as a computer hardware and software system designed to collect, manage, analyze and display geographically (spatially) referenced data*”.

If we want to define GIS covering all its features then it can be categorised in Table 1.

Basically, it can be stated that GIS can use any information that includes location or region. Now, the particular location of a region can be expressed in many different ways. It can be done through address, pin code, latitude-longitude etc. GIS can store, compare and analyse different types of information. The system can include information about the land, such as the location of water bodies, different varieties of vegetation, different kinds of soil, contours, transport facilities like roads, railway tracks, subways etc. It can include data about the density of population, economic standard, education level etc. GIS can also include information about the different buildings in the region like sites of factories, farms, and schools, roads, and electric power lines. Now days the GPS provide the satellite images of

Table 1. Features and analytical functions of GIS

Features of GIS	Related Definition	Related Analytical Functions
<b>A Process</b>	A system for capturing, storing, checking, manipulating, analyzing and displaying data which are spatially referenced to the earth (DoE, 1987: 132)	Presentation and thematic mapping Data Query Spatial Query Database
<b>A Toolbox</b>	Containing tools for collecting, storing, retrieving, transforming and displaying spatial data (Burrough, 1986: 6)	Integration Route finding
<b>A Database</b>	Of spatially referenced entities (Smith et al., 1987)	Point in polygon analysis Overlays
<b>An Application</b>	Cadastral information system, marketing information system, planning information system, etc.	Buffering Visualization and 3D modelling
<b>A Decision Support System</b>	Integrating spatial data within a problem solving environment (Cowen, 1988)	

(Source: Bahaire & White, 1999, p. 161)

9 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/application-of-web-based-geographical-information-system-gis-in-tourism-development/112401](http://www.igi-global.com/chapter/application-of-web-based-geographical-information-system-gis-in-tourism-development/112401)

## Related Content

---

### Dynamic Interaction and Visualization Design of Database Information Based on Artificial Intelligence

Ying Fan (2023). *International Journal of Information Technologies and Systems Approach* (pp. 1-13). [www.irma-international.org/article/dynamic-interaction-and-visualization-design-of-database-information-based-on-artificial-intelligence/324749](http://www.irma-international.org/article/dynamic-interaction-and-visualization-design-of-database-information-based-on-artificial-intelligence/324749)

### Classification of Sentiment of Reviews using Supervised Machine Learning Techniques

Abinash Tripathy and Santanu Kumar Rath (2017). *International Journal of Rough Sets and Data Analysis* (pp. 56-74). [www.irma-international.org/article/classification-of-sentiment-of-reviews-using-supervised-machine-learning-techniques/169174](http://www.irma-international.org/article/classification-of-sentiment-of-reviews-using-supervised-machine-learning-techniques/169174)

### Technology, Social Innovation, and Social Entrepreneurship in the Quadruple Helix

Sally Eaves (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 2897-2906). [www.irma-international.org/chapter/technology-social-innovation-and-social-entrepreneurship-in-the-quadruple-helix/112712](http://www.irma-international.org/chapter/technology-social-innovation-and-social-entrepreneurship-in-the-quadruple-helix/112712)

### Digitalization of Higher Degree Research (HRD) and Its Benefit to Postgraduate Researchers

Joseph Stokes, Rachel Keegan, Mark Brown and E. Alana James (2019). *Enhancing the Role of ICT in Doctoral Research Processes* (pp. 133-152). [www.irma-international.org/chapter/digitalization-of-higher-degree-research-hrd-and-its-benefit-to-postgraduate-researchers/219936](http://www.irma-international.org/chapter/digitalization-of-higher-degree-research-hrd-and-its-benefit-to-postgraduate-researchers/219936)

### An Extensive Review of IT Service Design in Seven International ITSM Processes Frameworks: Part II

Manuel Mora, Jorge Marx Gomez, Rory V. O'Connor, Mahesh Raisinghani and Ovsei Gelman (2015). *International Journal of Information Technologies and Systems Approach* (pp. 69-90). [www.irma-international.org/article/an-extensive-review-of-it-service-design-in-seven-international-itsm-processes-frameworks/125629](http://www.irma-international.org/article/an-extensive-review-of-it-service-design-in-seven-international-itsm-processes-frameworks/125629)