SPATIAL INFORMATION TECHNOLOGY & TOURISM INDUSTRY OF INDIA

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Abstract. The importance of IT in Indian Tourism has increased and computers are used to handle information needs. India offers vast scope for tourist destination. IT components like computers, phone, radio, satellites, GIS software, fax machine, camera etc can be used for disseminating information. The travel services like railways, airways, cars and bus rentals use computer application in Indian tourism. Preparations of tour proposal, costing, pricing etc are done on computer. Destination database provides information related to accommodation, sight seeing etc. Reservation, billing, food & beverage service, media, television and Internet are done in tourism with the of IT. New technologies like collaborate filtering, profile software, knowledge based software, video conferencing are also being used. GIS technique is being used for managing and analyzing data entry, manipulation and map production. Spatial modeling analysis is other capability of GIS with reference to different landscape features like point, line and polygon. There are barriers also in the use of IT in Indian Tourism like high cost of maintenance, learning and upgrading of computers, lack of powers and infrastructure etc. In future IT in India will involve areas like information and reservation system, reverse marketing, quality control, internet services and world wide web, legal and social aspects of IT applications in travel & tourism, management science and computer reservation system. The paper shows in detail various technologies available in the field of IT to develop tourism in India. The technologies mentioned are used in advertising and attraction sectors. In future, use of IT in tourism will definitely increase and so will the tourism industry.

1. Introduction

India is one of the greatest civilizations of the world, the continuity of which is traceable back to thousands of years. A decisive factor in shaping India's culture and history has been its geography and ecology. Beginning from the snow-clad peaks of Himalaya in the north to the sea encased southern peninsula, India is a veritable mosaic of landscapes and environment. With a variety of climatic conditions and therefore a wealth of flora and fauna it becomes a place of natural choice for tourists from abroad as well as from domestic regions desirous of experiencing other regional cultures. The importance of Information Technology in tourism, especially of the World Wide Web – has increased tremendously over the past years and this trend will certainly continue. Tourism is ranking the top ahead of all other categories of international trade. Tourism is concerned with

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pleasure – holdings travel and going or arriving somewhere. There are the motivations that make people leave their normal place of work and residence for short-term temporary visits to other places. Though there are many definitions for tourism, it could be simply defined as a 'travel and stay of a non-resident'. In order to travel to a particular area there must be a reason. For example a person may travel for leisure, business, visiting people and relatives, health, education etc. The paper shows the use of information technologies, like, computers and various other sources of information in the context of tourism. Today, the consumer has become very informative and also inquisitive. They require every kind of information possibly available regarding the goods that they are purchasing or the services that they are about to avail. The need of information is more important in the service industry such as tourism, where the goods being sold are intangible. In other words, the customers here are unable to see or touch the product that they are about to purchase but, they can only imagine, may be, the comforts of a flight they are about to take or the beauty of their travel destination. And, in such cases it becomes important to provide more and more information so that the client can imagine the feeling of the product. Computers and other components of IT are being used in a big way by the tourism sector for handling all types of tourism information needs. The number of tourists are increasing and so is the number of destinations. This has led to a boom in the tourism services, which in turn has led to a greater demand of information. The right kind of information at the right time and right place is more important now than ever before. Transport is necessary to travel and accommodation to stay at the destination. So, tourism as an industry has three major components: Attraction, Accommodation and transport. Tourism is unique. It involves industry without smoke, education without classroom, integration without legislation and diplomacy without formality. This growth of tourism activity clearly marks tourism as one of the most remarkable economic and social phenomenon in the world.

2.   Components of IT

There are many components of Information Technology which are used in tourism Industry such as: Phone, computer with internet and without internet facilities, T.V. with cable and without cable connection, Radio, Satellite, GIS software programme, satellite phone, fax machine, camera, wireless, electronic payment, DVD, CDs etc which can be extensively used for providing and receiving information

3.   Information Technology and Travel Sectors:

The travel services all over the world and in many parts of India are fully computerised. The travel services, such as railways, airlines tickets, car rental, bus/ coach hiroy, all are computerised and thus, proper information management is possible. Information regarding the tourists or passengers of yesterday, today and tomorrow is now readily available through the data generated by various tourism organisations. The fields of travel services using computer applications can be summed up as:

A.   **Railways**: Railways is the most favoured form of travel in India. The software package used in ticketing and other customer services has been specially designed and developed for the Indian Railways and the railways itself provides the training required for operating the package to its employees. A dial-in facility for information is also available. A person can dial the number for the information required and get the information by following the directions of the computerised system. This has made travelling in India not only easier, but also stress free in terms of reservation.

B.   **Car Rental:** Car Rental is a big business world over and in the metropolis and big cities of India as well. The main clients of car rentals are the corporate or business travellers along with the tourists wanting better service and comforts while travelling. The car Rental business is fully computerised abroad, particularly in USA & Europe. In India, a very few companies have computerised their car rental services. For the purpose of international booking e-mail & fax are the most preferred for booking and also for making any inquires.

C.   **Airlines:** The airlines have seen the maximum computerisation in the travel segment. Computer Reservation system is widely used to book tickets in all the airlines. The increasing popularity of air-travel globally, gave rise to the need of a better and efficient distribution mechanism. This information system now also provides information and reservation facilities in many hotel properties and car rental companies globally.

4.   Information Technology and Tour Services:

The tour operators are also using computers on a large scale. The preparation of tour proposals, itinerary, costing and pricing, invoice preparation, vouchers preparations all are done on the computers. Software packages made specially for the tourism purposes are readily available in the market. Many big companies like SITA, TCI and other have their own customised software package developed for the purpose of tour operations handling. Tour operators also make use of information technology in designing their products. Destination databases provide all the information related to accommodation, sight seeing, attractions etc.

5.   Information Technology and accommodation sectors like hotels–

The Hotel Industry is using computers in all the departments like front office, house keeping, etc. Computers are used to provide essentially efficient and better services. They are used for booking, billing, taking care of room services and food and beverage services also.

A.   **Reservation:** The room reservation system of star category hotels has been computerised almost all over India. Reservation system is very important as a proper system takes care of the selling of rooms, keeping in view both the daily fluctuations concerning arrivals and departure. In a properly managed property, much depends upon accepting and rejecting of reservation requests. The room reservation requests are considered on

the status of Guest, i.e., whether the guest is a business traveller or a tourist or a business partner or may be a black-listed guest and so on. The main advantage of computerised reservation system is that one is able to keep a record of the sold and unsold rooms.

B.   **Food and Beverage Services:** Computers are used to keep track of the bill preparation and menu card preparation, among other functions. Computers are also used for reserving tables in a restaurant – even a table in a specific location of a restaurant. In few restaurants, menu is displayed on screen or monitor and patrons can order via the screen. The guest can order by the computer and they will be served by a steward. In this way the guests are not bothered by the presence of a steward and can also easily understand and decide upon the food and price without any embarassment.

C.   **Billing:** The billing of the room, room services and restaurant services are all done using computerised receipt printing. The rates of the different rooms per day are already there in the computer software packages, where billing a guest, the check – in and check – out data and time are typed and auto processing allows computerised bills to be prepared. New technologies are always coming up and the old technologies are becoming obsolete, so keep reading the periodicals and journals to keep track of the changes taking place.

6.   Information Technology & Media: Media is playing a very important role in providing information. Media can be television or print media which provide the required information.

A.   **Television:** Television has proved to be a great source of information. There are many travel related programmes on the different channels. Most of the programmes provide information about new areas of travel, how to approach/ these, where to stay, what to eat, and also what are the do's and don'ts. Many of the Indian, organisations have also understood the scope of TV as a promotional media and have recently started using advertisements for promoting themselves, e.g. Taj group of Hotels, Thomas Cook & so on. Earlier, only print media was being used but lately very attractive and subtle advertisements of the tourism sector have started on the television channels.

B.   **Print Media:** Travel industry has been using print media for a long time for promoting business. Regular advertisements appear in the newspaper and magazines regarding the different fabulous or once in a life time offer regarding a tour package. Brochures and pamphlets are printed by tourism organisations for promoting themselves. Many of the brochures and pamphlets are just promotion materials. Newspapers are the best way to advertise for reaching the general public.

C.   **Others:** Various conferences, seminars and other meetings of the various organisations, are organised to keep the travel & tour industry together. The future plans are discussed on these occasions along with business transactions. These are the best places to make business friends or new

business partners. Many new CDs are coming in the market promising to be complete travel guides.

D.   **Advertising Sector:** Travel and Tourism fit especially well with interactive media because this is an information intensive industry where transactions can be made online, and current web users are heavy users of travel and tourism products and services. Interactive media call for interactive marketing. The following table shows the success factors for marketing on the web are:

Activity	What	How
Attract	Attract consumers to the application.	Audience creation Mnemonic branding advertising.
Engage	Generate interest and participation	Intuitive interface or navigation interactive content User – generated content.
Retain	Make Sure customers come back	Dynamic content, Transaction capabilities, Online communities
Learn	Learn about consumers preferences	Information capture Continuous preference learning
Relate	Customize interaction and value delivers	Personalized/ customized communications and products/ services Real-time interactions linkages to core business.

E.   **Internet:** Internet is the latest and fastest way to gain information and also conduct business. The direct booking on the various CRSs (Computer Reservation Systems) is possible over the internet. Internet is not only easy to access but it is also very easy to use since it is graphic oriented and uses very few commands. There is lot of information posted on the internet by the various department of tourism all over the world. Many tour operators, airlines, display their brochures on Internet as it gives a wider scope of publicity and for reaching people.

7.   **New and Innovative Technologies**:

A.   **Collaborate Filtering:** It is a data mining type of software. This type of application uses the power of customer databases to identify customers who have similar profiles like preferences, interests, and travel patterns, etc. based on previously accumulated customer knowledge. The findings are used for direct marketing.

B.   **Personalization Software/ Profilling:** This software is also a form of data mining. This type of software tracks and monitors the preferences and purchasing behaviour of consumers.

C.   Knowledge Based Software: This software is based on the belief that people want more choices but they just do not want to be burdened with those choices. This type of software takes criteria set by customers and goes into digital databases.

D.   Video Conferencing: Video conferencing is the type of software that allows people to communicate with each other visually, regardless of their physical location. It helps geographically dispersed businesses to cooperate. That may reduce the need for business travel.

8.   GIS Application in Tourism Planning:

Geographical Information System (GIS) is now recognised widely as a valuable tool for managing, analyzing, and displaying large volumes of diverse data pertinent to many local and regional planning activities.

Suitable Application Area of GIS

Functional Capabilities of a GIS	GIS Basic Questions		Tourism Applications
Data Entry, storage and manipulation	Location	Where is it?	Tourism Resource Inventories
Map Production	Condition	What is it?	Identify most suitable locations for development?

Due to the complex nature of tourism planning issues – the potential of GIS in resolving these issues is increasingly acknowledged. Generally, GIS applications in tourism have been confined to recreation facility inventory, tourism based land management, vision impact assessment, and recreation – wildlife conflict; and have been limited by lack of funding and uncoordinated and inadequate data collection procedures.

Table 2 Shows the Capabilities of a GIS

Database Integration and Management	Trend	What has changed?	Measure Tourism Impacts
Data queries and searches	Routing	What is the best route?	Visitors Management/ Flows
Spatial analysis	Patterns	What is the pattern?	Analyze the relationships associated with resource use
Spatial modeling	Modeling	What if ?	Assess potential impacts of tourism development?
Decision support			

Implementation of GIS :

Three different landscape features usually characterise tourism destinations:
1.   Points
2.   Lines and
3.   Polygones

Point features are individual tourist attractions, for example, a campground in a park or a historic site along the highway. Coastal beaches and resorts often follow a linear pattern, while big theme parks or natural parks are characteristics of a polygon feature. These location attributes are essential to a geographical information system. It is apparent that GIS has tremendous potential for application in tourism. However, due to the general lack of tourism databases and inconsistencies in data, its applications are limited. For examples, there is very little site- specific information about sources of visitors' origin and destination, travel motivation, spatial patterns of recreation and tourism use, visitors expenditure patterns, levels of use and impacts and suitability of sites for recreation/ tourism development – all of which are suitable application areas of GIS. Table 3 shows the application area of GIS.

Table 3 – Shows the common tourism – related issues and GIS applications

Problem	GIS application
Benchmark/ database	Systematic inventory of tourism resources.
Environmental Management	Facilitating monitoring of specific indicators.
Conflicts	Mapping recreational conflicts, recreational wildlife; user conflict
Tourism Behavior	Wilderness Perceptions Predictions
Carrying capacity	Identify suitable location for tourism/ recreation development, simulating and modeling spatial outcomes of proposed tourism development.
Data Integration	Integrating socio economic and environmental database within a given spatial unit.
Development control and direction	Decision support systems.

9.   The future of IT in Indian Tourism: ITT will focus on the following areas

- Information and reservation system.
- Computer Reservation system/ Global Distribution systems.
- Management information systems.
- Internet services and World Wide Web.
- Graphical.
- Expert systems, knowledge based systems and intelligent agents.
- Enterprise Modeling.
- Reverse marketing.
- Management Science.
- Quality Control.
- Legal and social aspects of IT applications in travel and tourism.

Conclusion: The paper discusses the fields related to tourism and the various technologies available to enhance the existing infrastructure. The technologies mentioned are mostly applicable in advertising and attraction sectors. Using the modern technologies, the present situation of tourism in whole India can be improved tremendously. Tourism is now one of the fastest growing sectors of economy of many countries particularly in India as it assumes a dominant role in the service.

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