Determining Regional Tourism Development Strategies of East Black Sea Region of Turkey by GIS

H. Ebru COLAK and Arif Cagdas AYDINOGLU, Turkey

Key words: GIM, Spatial Planning, Tourism Management/Planning, Tourism GIS

SUMMARY

Tourism has considerable importance for economic and social context of countries. Therefore, tourism development strategies should be determined to support Turkey's progress at regional and national level. If tourism's contribution to economy and its developing potential are taken into consideration, traditional methods to disseminate tourism-related information are inadequate. Building Tourism Management Information System (TMIS) with the supporting of Information and Communication Technologies (ICT) contributes tourism management services and users to reach the information easily and use it efficiently. For this, information including natural, recreational, and historic tourism entities, transportation facilities, tourism facilities, and etc. should be examined together in view of tourism expectations at country and regional level. State of play related to tourism can be determined and decision making support systems can be developed to direct tourism activities. In this study, with considering tourism functions, a sustainable model for TMIS is designed in acquiring, managing, and presenting the data. Database convenient with the model is designed for East Black Sea Region of Turkey and the data was acquired and converted to digital format. TMIS was built with the using of GIS techniques. After determining relationship between existent tourism entities and tourism facilities, requirements for tourism planning are examined. Produced cartographic maps and web based mapping applications namely Internet GIS enable the users to get information depending on their needs. Consequently, it is aimed to provide tourism management services for decision makers and the users from only a TMIS infrastructure.

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1. INTRODUCTION

While technology was developing in the world, passing from industry society to information society speed up by degrees. Technological developments also affected tourism industry. Tourism forms as a complete industry dependent each other with all components instead of an industry including various products. According to United Nations World Tourism Organization (UNWTO), tourism is the biggest industry of the world. A research executed by World Travel and Tourism Council (WWTC) appears that tourism develops twice more than international economics, provides very important employment possibilities (Lundberg et al., 1995), and has a part in country development.

Tourism is an industry based on acquiring data and using the data effectively. ICT, therefore, aims at getting, sharing, and distributing the data in tourism industry. Therefore, using ICT in tourism industry has become indispensable. Building TMIS with the helping of ICT provides disseminating information for tourism services and users. Presenting tourism data with geographic information or maps makes the data meaningful for both users and managers. GIS enables users to examine tourism data spatially and make required analysis and queries possible on these data.

In this study, tourism concept as developing industry and GIS possibilities for Tourism Services Management (TSM) is examined. To build TMIS, database is designed for East Black Sea Region of Turkey and the data was acquired and converted to digital format. TMIS convenient with the model was built with the using of GIS techniques. After determining relationship between existent base layers and tourism layers, decision maker and user oriented products were produced depending on user needs.

2. TOURISM AND ICT USAGE IN TOURISM SERVICES MANAGEMENT

Tourism can be defined as the act of travel for the purpose of recreation and business, and the provision of services for this act. Tourists are people who are "traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited" (URL-1).

Tourism is an information-intensive, information-sensitive industry, and a service industry, comprising a number of tangible and intangible components. The tangible elements include transport systems -air, rail, road, water and now, space; hospitality services- accommodation, foods and beverages, tours, souvenirs; and related services such as banking, insurance and

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safety and security. The intangible elements include: rest and relaxation, culture, escape, adventure, new and different experiences (URL-2).

Tourism economy has an important place in Turkish Economy and has about 5% of General Domestic National Product. It brings 10 billion USA Dollars to the economy and provide nearly one and a half million employee of which is about the one to four of the recorded employment. It was known that a potential and opportunity of Turkey is very high (URL-3). Managing and automating tourism data through GIS technology facilitates to planners, official employees and general public to use it in order to planning, development and marketing of tourism activity. Using GIS technology for TMIS has advantages (Caldera and Reyes, 1999);

- Thematic cartography can be generated in a fast and inexpensive way.
- Maps are produced in variable scales according to different kinds of users.
- To make applications with basic information and to produce new information through variable combination is faster and cheaper that crossing data in manual way.
- They can shows results in cartographic, statistical, or table form.
- Errors can be corrected dynamically, saving the time and material that they would cost if corrections need to be done on printed maps or tables.
- Information can be integrated easily, through automated relation between different databases that describes the same geographic space according different themes.

These advantages help in the simplification of processing of voluminous geographic-tourist information, referred to natural and cultural resources, tourist facilities, accessibility, transport, land uses among others. Also, they can drive spatial analyses necessary to generate thematic maps or statistical reports, as much for academic, institutional, enterprise interest as for own tourists requirements (Mejia et al., 2002).

3. BUILDING TMIS FOR EAST BLACK SEA OF TURKEY

East Black Sea Region of Turkey was selected as a study area (Figure 1). The area covers 6 provinces including Artvin, Bayburt, Giresun, Rize, Gumushane, and Trabzon totally equal to 32269 sq km. This area is Turkey's greenest region with outstanding natural beauty and has its lush green mountains and valleys, glacial lakes, clear gushing mountain streams and long beaches. The area is also sprinkled with early Byzantine and Genoese monasteries and castles, rising impressively from the steep hill sides, and is renowned for its friendly people with their strong cultural traditions. Due to the region has some socio-economic issues, tourism can be an important industry for supporting the region's developments.

3.1 Designing TMIS model for East Black Sea region of Turkey

TMIS model was designed to produce documents aimed at TSM and to produce tourist maps and guides, and form a decision support mechanism supporting TSM. Taking tourism expectations into consideration, database was designed as seen table 1. The data are divided into two parts, namely base and tourism data. Base data especially includes the layers

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reflecting real world objects such as surface, hydrograph, transportation, administrative units, and demography. Tourism data includes historic, natural, and recreational layers identifying tourism entities. Tourism facilities including hotels and some tourism attractive centres are also collected under tourism data.

Figure 1. Study area

3.2 Data Collection and TMIS database building

Base data such as road, river, lake, administrative unit, elevation were obtained and compiled from digital data prepared by KTU GISLab, the DOKAP Project Data, the General Command of Mapping of Turkey. These data were digitized from screen or edited graphically with the helping of GIS editing capabilities. Surface was created on from elevation data and then covered by orto-imagery. Administrative areas and unit layers, related attributes were completed and edited from governmental sources. All these base data were collected on ArcGIS software and prepared depending on database design.

Information about Historic and Nature entities was collected from web sites of the Ministry of Culture and Tourism of Turkey, provinces' governerships and from some catalouges. Information about recreation entity group was collected from recreational and tourism web sites and sport maps. Historic and nature entities were marked with the helping of explanations on documents or determining location on similar maps. For each record on historic, nature, and recreation layers, related attributes were written to atribute tables. 69 records for historic layer, 50 records for nature layer, and 184 records for recreation layer were collected.

3.3 User Oriented Tourism Products

Each tourism object to be integrated in a tourist map presents the location of object in geographic space. Because the interests of the tourist like up-to-date information (e.g. hotel) influence the map representation, information must be disseminated through an interactive session. Therefore, tourism maps should be created as to user needs.

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Table 1. Data usage in TMIS model

Tourism Data
Tourism Facilities
  »Hotels 4S, 5S »Tourism Centers
Recreational
  »Balloon Touring »Mountain biking »Mountaineering »Diving
  »Canoeing »Rock Climbing »Skiing »Rowing »Rafting
  »Windsurfing »Trekking and Hiking »Brow Parachute
Historic
  »Mosque »Fountain »Turkish Bath »Fortress »Thermal Spring
  »Church »Bridge »Pavilion »Monastery »Museum »Clock
  Tower »Chapel »Tomb »Underground City
Natural
  »Cave »Park »Picnic Area »Waterfall »Plateau »Other; River,
  Lake, Island details.

Base Data
Demography
  »Population »Income
Administrative Unit
  »Province, County Area
  »Province, County, Village Center
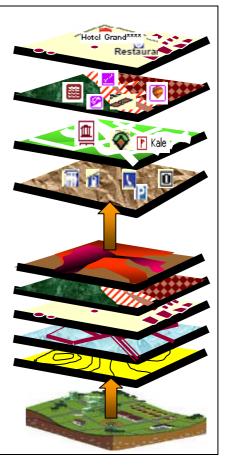**Transportation**
  » Road » Railways
Hydrograph
  »Sea »Lake »River
Surface
  » Elevation » Orto-Imagery

Following database design, cartographic model which makes the maps and spatial data understandable and increase maps' perception level was executed. And then tourism products oriented to users are produced for TSM. Tourism maps like wall paper, folded maps, and tourism guide can be produced at regional and provincial level to support various tourism services.

As seen figure 2, a regional tourism map on folded map and tourism guide, 120x75 cm, was produced for the region. Tourism maps can be created for each province, depending on cartographic model. Also, various tourism products like trekking maps, route planning for a tourism site, and national park maps were produced and can be created continuously if database updates periodically. A tourism web site was browsed from the internet. A user can reach tourism maps and data, get route information about related tourism facilities and entities for East Black Sea region from anywhere all over the world. On this architecture, because the data can be maintained and updated in a centralized location, users can reach updated information. This system presents basic GIS functions including pan and zoom the map, identify and find features, and the users can get information about tourism entities easily. Attribute searches and queries can be done with user interface.

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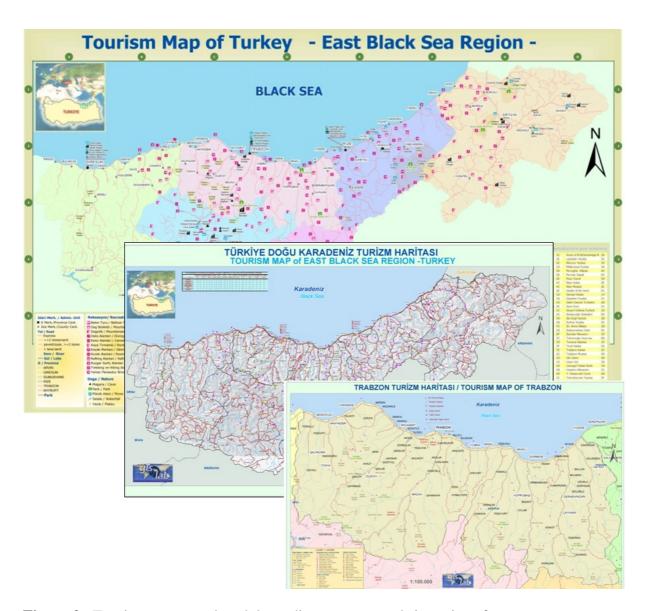Determining Regional Tourism Development Strategies of East Black Sea Region of Turkey by GIS

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Figure 2. Tourism maps produced depending on user needs in various formats

3.4 Decision Maker Oriented Products

TMIS provides decision makers and users to reach information easily and the most effective way. Decision making in geographic scope can also be supported by geographic queries and spatial analysis. Spatial analysis operations like nearness search, distance search, and region search (Pühretmair et al., 2002) are needed to find optimal solutions to complex problems. As a case study, a preliminary work was done to determine where a tourism center should be built. This criterion for this analysis is the accessibility of tourism centers in one day's period by walk or car. 4S and 5S Hotels and Tourism Centers were selected from tourism facilities database. The accessibility from a tourism facility to a tourism entity was calculated 43km as distance in 1 days travel time. Tourism entities which are 43km far from a tourism center were selected by network analysis function. As seen figure 3, tourism areas which don't have

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tourism facility problem were determined with dark red firstly and light red colors. As a result of spatial analysis process, 3 areas circled yellow are chosen the most suitable areas for tourism investment.

For example, Artvin province circled 3 was investigated to build a tourism facility, depending on the result of site selection analysis. And then, in this area, Murgul or Artvin county circled areas were determined to build a tourism center with taking administrative units, population and transportation arteries into consideration.
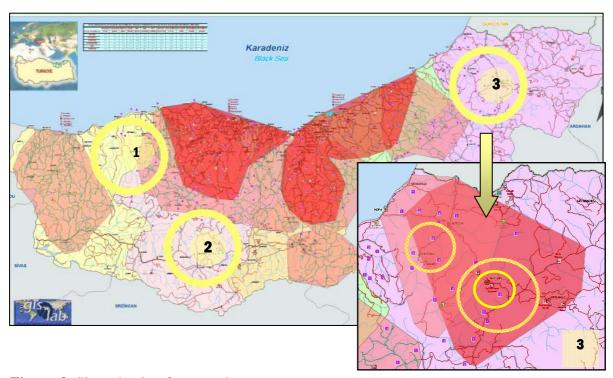

Figure 3. Site selection for a tourism center

4. CONCLUSION

This paper aims to support TSM for decision makers and the users from only a TMIS infrastructure. It enables both decision makers and users to reach knowledge, maps and documentations from the database for their needs. TMIS provides to reach knowledge easily and rapidly for decision makers. Designing a TMIS for East Black Sea Region of Turkey is essential component for decision makers to determine regional tourism development strategies and relevant decisions. From updating database, maps and documents were produced with improved capabilities of access to knowledge, queries and spatial analysis. With this respects, it is useful to carry tourism oriented resolutions for decision makers and gained time and finance.

Various products such as maps, guides, web sites can be produced with TMIS model of East Black Sea region of Turkey. Users can reach territorial tourism information with produced

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tourism maps like wall paper, folded maps, and tourism guide at regional and provincial level. Users can generate various characteristic and scale maps as a rock climbing map, trekking and hiking area map, mountain bike map etc. for their needs and can print it. Consequently, it is easily and quickly to access information for users.

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BIOGRAPHICAL NOTES

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