

---

# *GIS TECHNIQUE FOR THE MANAGEMENT OF TOURISM ACTIVITIES: THE CASE OF ELBASAN REGION IN ALBANIA*

**Dr. Bederiana SHYTI**

Department of Mathematics  
University "A. Xhuvani", Elbasan, Albania

**Dr. Evis KUSHI**

Department of Business Administration  
University "A. Xhuvani", Elbasan, Albania

**Dr. Enkela CACA**

Department of Economics  
University "E. Cabej", Gjirokastra, Albania

## **ABSTRACT**

This paper provides an initiative for the development and the implementation of Geographic Information System (GIS) in the tourism industry for Elbasan, which represent an important region in the centre of Albania. It is focused on the analysis, decisions making and management of tourism activities using GIS technique. GIS integrates spatial database, statistical data and textual information. Applications of GIS in tourism and recreation planning illustrate that GIS is a strong and effective tool that can help in tourism planning and decision-making. The results of this paper suggest that the power of GIS lies not only in the ability to visualize spatial relationships, but it also reflects many interconnected components and complex relationships in the tourism industry.

**Key words:** GIS, management, statistics, tourism.

## **1. INTRODUCTION**

Many studies in the literature suggest that statistics is very important for the management of tourism enterprises worldwide. In general, statistics offers a range of methods for the collection, presentation and analysis of data (Lehmann, 1988). It is an important part of scientific method for empirical inquiry (Good, 1988; Mayo, 1996). Statistical information becomes an important instrument, both for the definition of policies and the evaluation of their impact and for the current management of state and private enterprises. In addition, adequate statistical information makes it possible to analyse sectors and -sub-sectors (including tourism) more accurately, thus helping the activities of commercial enterprises and the transparency of the market itself. This explains the priority given in many countries with high tourist flows to the maintenance of a statistical database which corresponds to the needs of the sector.

The success of the tourism industry in any country depends on the ability of that country to develop, manage and market the tourism facilities and activities in that country. (Karagiannis St., 2008). For many developing countries, in particular the less developed countries (LDCs) and small economies such as Albania, tourism is probably the only economic sector which provides concrete and quantitative growing trading opportunities. Therefore, this paper gives discussion on an initiative for the development and the implementation of Geographic Information Systems in the tourism industry for an important region of Albania.

For a tourist, coming to a new destination can be both exciting and freighting. To get the most out of the visit, he needs different kinds of information especially geographical information. He wants to know where the tourist agency is, where tourist attractions and hotels are, where sightseeing trips go and so on. GIS is able to show a large amount of tourist information in an easy to read key map. The benefits of using a GIS are obvious: The information is always up to date.

### **What is a "GIS"?**

A GIS is an intelligent system enabling the combination of the latest technologies in the fields of information technology, digital data processing and spatial analysis for encoding, storing, processing, maintaining, analysing and presenting data in association with their geophysical location. It is a "geo-referenced" data analysis and presentation system. Economic, social and natural actions and phenomena all have a spatial component which

is furthermore one of the primary modes of organising the statistical information concerning these phenomena. The latter are thus linked with geographical territory in a very general way. By coupling these two characteristics, we can greatly enhance their effectiveness.

A GIS offers the possibility of a structured data management, data access as well as efficient analysis procedures applied to the data. Within GIS, objects are being built by linking spatial data with semantic information. A GIS can be used to answer different questions depending on the data stored in it. (Seker et al, 2001).

### **The link with statistics**

A GIS links the geo-graphical data with the descriptive attributes (statistics) produced or collected. The efficiency of a GIS depends especially on good geo-referencing of the attribute data: a spatial code must be used to link these discrete or continuous data with the regions or precise locations to which they relate. This eliminates a certain number of conceptual stumbling blocks, which traditional statistics frequently had to contend with, particularly when the data was subject to temporal and spatial variation. The close interlinking of statistical data and the methods of spatial analysis requires more attention from statisticians to geographical information and the rules for its management. They need the formulation of precise rules for the collection, treatment and distribution of spatial statistics.

## **2. GIS TECHNOLOGY AND TOURISM STATISTICS**

Tourism statistics is generally organised in a multidimensional database. The combination of multidimensional database technology and the GIS technology enables the geographical analysis of tourism information from different perspectives. With an implemented GIS, a local tourist information guide is created with powerful search and analysis functionality. For example, where should a tourist attraction be placed due to the geo-demographic profiles in different areas? Or, are there enough transportation facilities to support the attraction? All over the world, getting maximum benefits from tourist zones according to the concept of sustainable development is possible only by using management plans suitable for the characteristics of the area. Including partnership approach, this is becoming very common, effective, correct and fast decision-making is possible using a geographic information system.

Tourism and recreation are considered as very important aspects in social and economic life. Since a tourism product is a combination of goods (transportation, accommodation, services, etc), it is difficult to carry out strategic and competitive tourism activities without tourism planning.(Karagiannis St., - Apostolou A.,2004). Experiences show that tourism planning has recently changed such that it involves many actions, participants, levels of decisions and implementation. Success is measured by the achievements of an interaction and collaborative actions, among public and private sectors effecting the tourism development. GIS can be an excellent tool not only to design and regulate the correct spatial development, but also to support and control the process of the plan implementation.

The following definition done by Semcor Company explains how GIS can be used for the improvement of the tourism industry. “The concepts of time and place are ingrained in the tourism industry. Having an understanding of your customer base and where they come from, and knowing what they want to see and do and how to get them there are essential to the success of any tourism operation. Whether you are a hotel manager, a diving instructor, or a government official, a GIS can provide you with the tools you need to better prospect, understand and serve the needs of your clients”. (Semcor 2001)

Use of GIS technology for tourism planning offers a group of advantages in data documentation and processing (Hogan 2001). There are two categories for the use of a GIS system in tourism, public use and management use. The public wants to find geographic information about a place before they go there. They want to know where things are located, what amenities are available, what the climate is like, and they want to be able to do site specific searches to find information. This can be achieved through Web-based GIS, or Information Kiosks located in key tourist areas (Ugarte, 1997). The other user of the GIS is the Management side; management may be done by individual operators, a tourism group, or by the local municipality. Management users want to ask the system for where customers are coming from, their socio-economic backgrounds, and good potential locations for new tourist sites, etc. A list of general questions that public and management user may ask of a GIS system is given in the following table.

**Table 1** Public user and Management user questions in GIS.

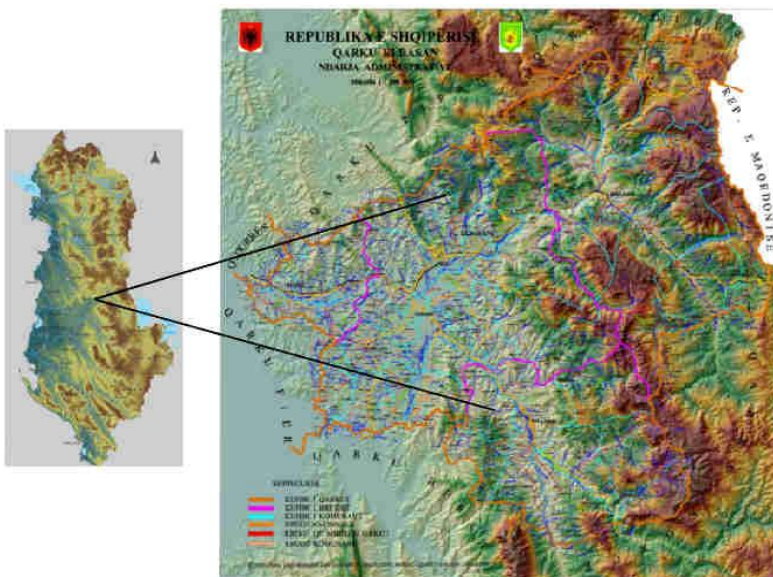
<b>Public User Questions</b>	<b>Management User Questions</b>
Where is the city, state or country located?	What are the areas that tourists are interested in?
What is the climate? Does it have warm or cold weather? What is the best time of year to visit?	What are the physical-geographic characteristics of those areas?
What is the official language?	What are the accommodations available?
Where are the accommodations in the city located? What is their classification? What are their rates?	What is their classification and categorization?
What kinds of public transportation are available? Where are rental car agencies located?	Where is the stops/station of public transport facilities located?
Where are the cultural/natural amenities located? What is their operation schedule?	What are the demographic and socio-economic characteristics of the local population of each tourism space?
What attractive places are near my hotel?	What are some plans, programs and projects that would help stimulate tourism activity.
Where are the banks? Where is the police station? Where is the hospital?	What infrastructure services are in current and potential tourist areas? Which is the service quality?
Where are the shopping centres?	What is the tourism demand for attractive places, tourist equipment, and services?
	What public and private institutions are available that is competent in tourism planning?

(Caldera de Ugarte et al 1997)

### 3. APPLYING GIS TO ELBASAN DISTRICT

This study is focused in Elbasan district, which has a lot of historical and tourist places. Region of Elbasan, figured in Tourism Movement Schedule, lies in the centre of Albania. It has a surface of 3292 km<sup>2</sup> and a population of 434.911 habitants (population for 2009). It is limited in north and north-west with the district of Tirana, in east and south-east with the district of Korca, in west and south-west with district of Berat. There are four unions in its structure: the union of Elbasan, which is the centre of this district, the union of Librazhd, the union of Peqin and the union of Gramsh. Officially the district has 7 corporations, 43 communes and 386 villages.

**Figure 1** Elbasan District

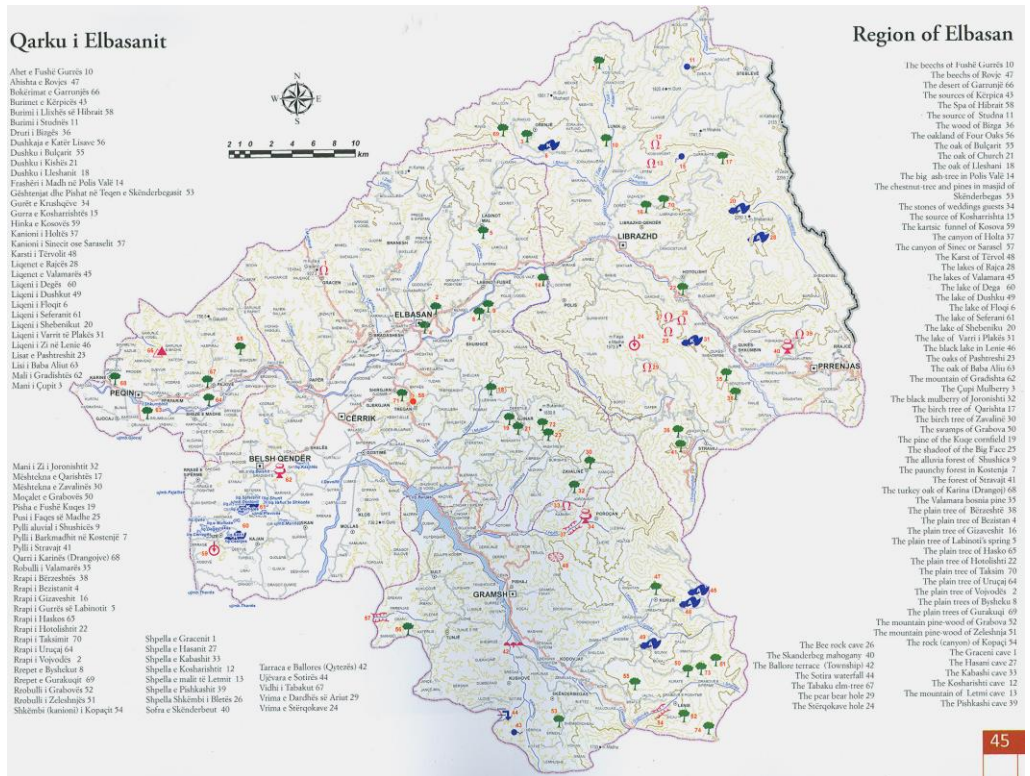


The union of Elbasan has an area of 1481 km<sup>2</sup> and a population of 282.277 habitants (population for 2009). In its structure, there are three corporations (corporation of Elbasan, Cerrik and Belesh) and 20 communes. It lies in the centre of Albania and it is limited with: in north-west with union of Tirana, in east and north-east with the union of Librazhd, in south-east with the union of Gramsh, in south with the union of Berat and Kucova and in south-west with the union of Lushnja. It lies in the field with the same name, in the right of river Shkumbin. In addition, about 38% of Elbasan district is formed by mountains, 34% by hills and 28% by fields. Some of the natural attractions are: the

natural trees of Bysheku, the natural tree of Bezistan, the lake of Shebeniku, the old church, etc. The tourism department in Elbasan is still collecting the data for the tourist places. Study area is given in the following figure:

These results can be achieved by queries in GIS Design and Application for Tourism:

- Determination of important and necessary places for tourism.
- Determination of historical and tourist places.
- Determination of the best suitable hotel.
- Determination of the optimum plan for sightseeing places.
- Determination of the shortest distance between the selected places.



GIS was used as an analytical tool for establishing arrangement and density of tourist objects in that area, as well as their characteristics, such as type, category, name, quality, etc.

Graphic data was obtained via different ways. Some of them have been taken from Council Region of Elbasan Authority and some of them obtained from hard copy maps by means of digitizing. These maps in different scales have been brought together and then used in this study. This study is oriented to tourism activities. Two different groups of variables have been determined. These are functionality variables, such as political territories, natural resources, cultural-historical resources and facilities, and tourism qualifications such as infrastructure, environmental quality, land use and economic activities.

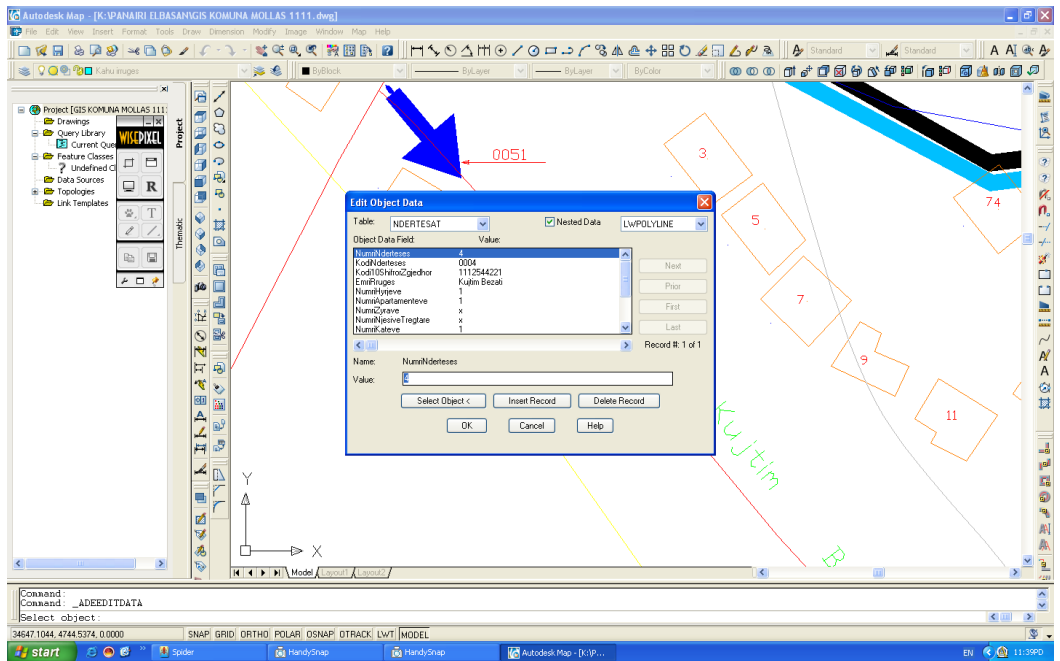
**Table 2** Type of data presented by GIS

Name of Layer	Attributes
Way	ID, Name, Type
Bus Station	ID, Name
Restaurant	ID, Name, Type of Food, Address
Public Building	ID, Name
Church	ID, Name
Public Garden	ID, Name
Hotel	ID, Name, Category, Pool, Air Condition, Car Rental, Room Service, Shower, Sightseeing, Coffee, Restaurant, Number of Room, Cable TV, Lounge, Laundry, Meeting Room, Fitness, Disco, Address, Web, Telephone, Fax
Mosque	ID, Name, image, document
Police Station	ID, Name, Telephone
Museum	ID, Name, Telephone, image
Boundary Of District	ID, Name, Area, Length



Several different queries and analysis have been done after attributes are connected to graphic data. The easiest query is identifying an object. One of the similar query results is given in the following figure:

**Figure 2** Some results from the use of GIS



#### 4. CONCLUSION

Tourism is a highly complex activity and thus requires tools that help in effective decision making with regard to competing economic, social and environmental demands of sustainable development. Applications of GIS in tourism and recreation planning illustrate that GIS is a strong and effective tool that can help in tourism planning and decision-making. Impact assessment and simulation are increasingly important in tourism development, and GIS can play an important role in auditing environmental conditions, examining the suitability of locations for proposed developments, identifying conflicting interests and modelling relationships. However, because of the highly data-driven applications of GIS, its use by tourism and recreation professionals have been very limited. This is mainly due to lack of long-term, comprehensive, and systematic data on tourism issues. Currently, GIS application in tourism has been much restricted to inventory and

case illustrations. With consistent spatial data on tourism locations, characteristics of these locations, and long-term visitor use data, its applications will grow significantly. The growing worldwide interests in tourism and recreation studies will certainly demand more sophisticated and complex applications of GIS in these fields.

## REFERENCES

- De Mast, J. (2002), Quality Improvement from the Viewpoint of Statistical Method, PhD-thesis, University of Amsterdam.
- Good, I. (1988), "Scientific method and statistics," Encyclopedia of Statistical Sciences, 8th ed., Kotz S and Johnson N (eds.) vol. 8, Wiley, New York.
- Mayo, D. (1996), Error and the Growth of Experimental Knowledge, The Univ. of Chicago Press.
- Karagiannis St., (2008).A Theoretical Valuation of the Thematic Analysis - Variables ...Leadings Role of the Management..., with the Aim of Efficiency Improvement, Archives of Economic History, Vol XX, No 1, p.p. 175-187
- Lehmann, E. (1988), "Statistics: an overview," Encyclopedia of Statistical Sciences, 8th ed., Kotz S and Johnson N (eds.) vol. 8, Wiley, New York.
- Këshilli i Qarkut Elbasan, (2009), Zyra e Zhvillimit, "Plani i veprimit te turizmit"
- Caldera de Ugarte, N., Cuberos, R., Indriago, J., Molina, N., Sigtur-Zulia: An Application of GIS Technologies for Tourism Planning, University of Zulia, Maracaibo, Venezuela, 1997.
- <http://www.esri.com/library/userconf/proc00/professional/papers/PAP709/p709.htm>
- Hogan, M., Literature Review. The Use of GIS in the Tourism Industry, GIS-Set B.A00262245.
- GIST 5120 Project Planning, 2001.
- [http://gisweb.athena.bcit.ca/students/class01-02/gisb006/GIST5120\\_3.html](http://gisweb.athena.bcit.ca/students/class01-02/gisb006/GIST5120_3.html)
- Karagiannis St., - Apostolou A., (2004).Accomplishments in Tourism Management in Crete Island, Buletinul Stiintific al Universitii "Politehnica" of Timisoara Romania, Vol. 49(63). Fasciola 1,2, Management, Engineering Economic, Transportation Engineering, p.p.1-12
- Semcor Information Systems and Services, Tourism and Recreation, 2001.
- <http://corpweb.semcor.com/gis/solutions/industry/tourism.html>

The SIGTUR project. An Application of GIS Technologies for Tourism Planning, 1997.

<http://www.esri.com/library/userconf/proc00/professional/papers/PAP709/p709.htm>