TOURISM MAPPING: AN OVERVIEW OF CARTOGRAPHY AND THE USE OF GIS

Oliver Valentine Eboy

Faculty of Humanities, Arts and Heritage, University Malaysia Sabah

Email: oliver@ums.edu.my

ABSTRACT

Tourism able to greatly assist in developing economy as it also contributes to other sectors. One of the most important tools in promoting tourism is tourism map. Tourism mapping is important to provide guidance to tourists in identifying and finding the best tourism spots in the area. However, most tourism maps were not produced using the correct concept and the right tools. The effect of this would lead to lacking of information or misleading to the tourist. This paper discusses, based on literatures, the concepts of creating a tourism map through cartography, and introduces the idea of using GIS technology as one of the methods to produce tourism map effectively and efficiently.

Keywords: Tourism; tourist; Mapping; GIS; Cartography; Tourism Spot

1.   INTRODUCTION

Tourism is an industry with one of the strongest effect on the economy and social context of countries, because it helps in developing other sectors through multiplier effect. It consists of activities, facilities, services and industries that deliver a travel experience such as transportation, accommodation, eating and drinking establishments, entertainment, recreation, historical and cultural experiences, destination attractions, shopping and other services available to travellers away from home. In other words, tourism is defined as sum of the phenomenon and relationships arising from the interaction of tourist and host communities in the process of attracting and hosting these tourists (Fadahunsi, 2011). Tourism has historically been dependent on the character of the destination, including attractions, beaches and resorts. It is a complex activity that requires the availability of certain parameters (e.g. accessible road networks, standard accommodation facilities, attractions) and information on potential and existing attraction sites.

A tourist, usually, has limited spatial knowledge of the visited environment, and maps perform an essential function in the acquisition of spatial information about the travel destination. Attracting a share of travel business is dependent to great degree upon a comprehensive marketing strategy and in that display and visualization of tourist related information plays a major role. For highlighting the attractiveness of the tourism destinations, Maps play a significant role in how we discover, learn, and communicate information about the places around us. Maps are indispensable vehicles for the communicating spatial information and creating images of the space and the place.

Therefore, in order to provide a good service in tourism industry, tourist maps need to be produced. Tourist maps provide visual information for anyone to find out the tourism spots in the area. Tourist maps have been known to play vital roles in identifying and locating tourist attractions and has essential roles to play in the effective and efficient management of tourism resources is an ineluctable fact.

However, there is a need to know the correct procedure or format of tourism mapping to produce an accurate and reliable tourist map. Some tourist maps such as in Nigeria, are significantly lacking in comprehensiveness, accuracy and up-to-date geo-referencing. (Olabintan and Ajirotutu, 2012). Having mentioned that, this paper shows the best procedure in tourism mapping using various literatures from previous study.

2.   THE FUNCTIONALITY OF A TOURIST MAP

A map provides information on existence, the location of, and the distance between ground features, such as populated places and routes of travel and communication (Akinola, Odeyemi and Suru 2011). Tourist maps perform numerous functions most important of which are: providing information for their users (tourists) about tourist objects location, facilitating orientation in geographical space and moving around the area, help in making the choice of the visited tourist region and in planning the journey. The discussed maps perform many other functions customarily attributed to maps one of which is a documentary function.

Maps provide general information to tourist at a glance (Olomo, 1993). The content of such maps may include: the geographical area of the town, the general communication systems, functions of the various parts of the town, location of interesting monuments and tourist services (Olomo & Enaruvbe, 2005). These are better explained in map form.

Maps are useful, or, at least, reassuring, in many activities of everyday life. In the case of touring, a map is an indispensable article of equipment. Perhaps the most characteristic image is that of a tourist standing at a corner, consulting a map. Does the map give the information that we wanted? It is interesting-and more than that, necessary-for a map-maker to find out how the map is used. A tourist map has some characteristics that must be defined in order to analyse its usefulness (Filippakopoulou & Nakos, 1995);

- A tourist map is read by people of different nationalities and cultures, and of different conceptual abilities.
- It must portray a large quantity of data.
- It must satisfy a variety of visitors' purposes.
- It is useful for organizing tours of different durations.

Other than that, Stanton (1989) established the following categories of information after reviewing tourist maps from all over the world:
- Accommodation
- Cultural features
- Entertainment
- Facilities
- Recreation
- Services
- Transport
- Unique features
- Warnings

However, all the characteristics above that need to be included in the tourist map might conflict with cartographic principles. The conflicts usually faced by the maker of a tourist map are the conflicts between the desire to satisfy the reader, and the application of cartographic procedures (Filippakopoulou & Nakos, 1995)

The cartographic procedures are hierarchically conceived by the map user, as shown in Figure 1. Symbolization (top) is closer to map users; generalization (middle) is at a moderate level, but significantly interconnected to the other two cartographic procedures; and the information content (bottom) is the 'infrastructure' of the tourist map. The main point here is to underline the limitations of the traditional map as an effective tool for tourists, and to show the relationship between users' needs and cartographic procedures.
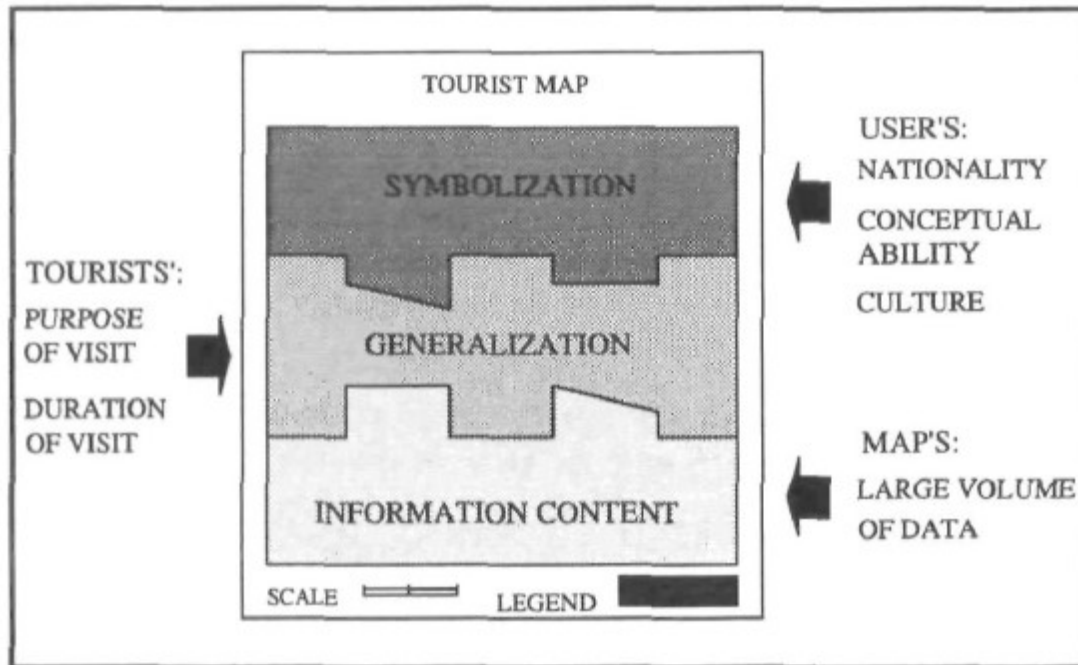

Figure 1: Tourist map and cartographic procedure
Source: Filippakopoulou & Nakos (1995)

Therefore, in order to produce an accurate tourist maps that is in line with the cartographic procedures, the use of GIS tools is recommended.

3.   COMPARISON OF TRADITIONAL MAPPING AND GIS IN PRODUCING TOURISM MAP

Both GIS and traditional maps represent the real world. Apparently, the GIS is the data while the map is the picture. The end result of GIS analysis is often a map, or cartographic output, but it is only one of many output types. Once created, a traditional map cannot be changed. However, as an integrated system, a GIS allows users to ask new questions of a database and visualize answers.

The comparison between paper map (traditional map) and digital map (GIS) with respect to key activities can be summarized in Table 1.

Table 1: Comparison of paper mapping and digital mapping

Activities	Digital Mapping	Paper Mapping
Preparation	Initial version tedious to prepare but quick and efficient to monitor	Start from scratch every time
Storage	Digital Database Standardized and integrated, compact memory capacity	Different scales on different standards, voluminous and bulky
Retrieval	Quick retrieval	Paper maps and tables
Updating	Automatic search and replace by computer	Manual check and revision
Overlay	Systematically done Faster integration of complex, multiple spatial and non-spatial data sets	Expensive and time consuming
Spatial Analysis	Faster	Time and energy consuming, slow
Display	Easier and faster to prepare Better quality	Slow, tedious and time consuming

Source: HRUL (2007)

4.   APPLICATION OF GIS IN TOURISM MAPPING

Presently, Geographic Information System or GIS has been used extensively in many areas. In the tourism industry, GIS is used to provide (Jovanović, and Njeguš, 2008):

- A digital map base for printed maps
- Digital files for Internet mapping
- Digital files for mobile mapping
- Attractions map
- Website with interactive mapping

Geographic Information Systems (GIS) however, have the capability to handle several kinds of information that can be related to a location or area. Using Geographic Information Systems (GIS), therefore, it becomes possible to integrate tourism information, visualize complex scenarios, present powerful ideas and derive effective solutions, otherwise not possible. Geographic Information Systems (GIS), allow the user to enter enquire to explore maps, analyze geographic locations, retrieve the information linked to these locations and download and print out of required information. The utility of the Internet allows information to be exchanged in a rapid and efficient manner, thereby helping tourists make important decisions.

The database created in GIS format will answer following frequently asked question in user friendly manner (Shamim Ahmad Shah and Muzafar Ahmad Wani, 2015).

- Where are the tourist destinations located?
- What is the shortest route to reach a particular destination?
- How is the geophysical environment of the destination?
- What is the best time of year to visit?
- What are types and class of accommodation available?
- What are distributional pattern of amenities and tourist products?
- Where are important shopping centers, ATM, parks etc. located?

GIS technology offers great opportunities for the development of modern tourism applications using maps. This technology integrates common database operations such as query with the unique visualization and geographic analysis benefits offered by maps. Moreover, maps have been known to play vital roles in identifying and locating tourist attractions. GIS however provides the facility to extract different sets of information (e.g. tourist attractions, hotels and their distances from one another, roads, settlements, vegetation, land use data, changes in tourism resources) from a map and use them as required (Fajuyigbe, Balogun and Obembe, 2007) because of the dynamic capability of GIS tools to incorporate changes that occur over time to its database (Table 2).

Table 2: Capabilities of a GIS

Functional capabilities of a GIS	GIS Basic Questions	Tourism Applications
• Data entry, storage and manipulation • Map production • Database integration and management • Data queries and searches • Spatial analysis • Spatial modelling • Decision support	What is at? (Location) Where is it? (Condition) What has changed? (Trend) Which is the best route? (Routing) What is the pattern? (Pattern) What if…? (Modelling)	• Tourism Resource Inventories • Identify most suitable locations for development • Measure tourism impacts • Visitor management/flows • Analyze relationships associated with resource use • Assess potential impacts of tourism development

Source: Bahaire and Elliot-White (1999)

GIS also has the capability to produce map output that meet accordingly to cartographic requirement. By using the map template with its basic map tools of legends, north arrow, scale and credit that can be found in the GIS software such as the ArcGIS, the map can be produced efficiently and accurately without difficulties (Figure 2). This can helped greatly in tourism mapping especially when lots of information involved as GIS capable to produce the maps in different themes and sizes accordingly to the user needs and at the same time maintain cartographic requirements.
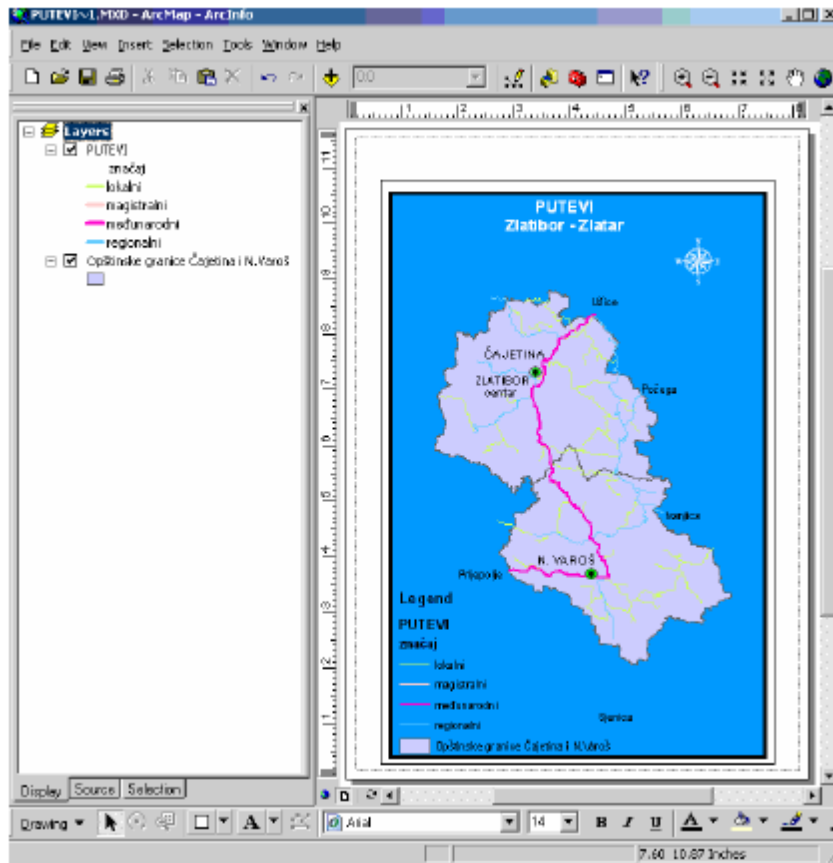
Figure 2: Using map template for tourism mapping in Zlatibor and Zlatar with ArcGIS
Source: Jovanović, and Njeguš (2008)

5.   CONCLUSION

This paper shows the methods in tourism mapping based on previous studies. It is important to know the characteristics, functionalities and requirements of a tourism mapping. The guidelines provide useful information on how to develop the tourist map accurately and efficiently. The function of GIS however, capable to produce a better tourism mapping in a such a short time, less cost and less manpower while maintaining the cartographic procedures.

REFERENCES

Bahaire, T. & Elliott-White, M. 1999. The application of Geographical Information Systems (GIS) in sustainable tourism planning: A review. International Journal of Sustainable Tourism, 7 (2), 159-174.

Cognitive Science 1999. http://www.hfac.uh.edu/cogsci/keytopics.html (Accessed on 23 Feb, 2017).

Collinson, A., 1998. British Cartographic Society Design Group, http://acl.arts.usyd.edu.au/VISTA/20maps&projections/cartographic_design.htm (Accessed on 28 July, 2004).

Fadahunsi, J. T., 2011. "Application of geographical information system (GIS) technology to tourism management in ile-ife, osun state, Nigeria", Pacific Journal of Science and Technology, vol. 12, no. 2, pp. 274-283.

Fajuyigbe, O., Balogun, V.F. and Obembe, O.M., 2007. Web-Based Geographical Information System (GIS) for Tourism in Oyo State, Nigeria. Information Technology Journal, 6:613-622.DOI:10.3923/itj.2007.613.622 URL: http://scialert.net/ abstract/?doi=itj.2007.613.622

Filippakopoulou, Vassiliki & Nakos, Byron, 1995. Is GIS Technology the Present Solution for Creating Tourist Maps?, The International Journal for Geographic Information and Geovisualization October 1995, Vol. 32, No. 1, pp. 51-62

HLURB, 2007. GIS Cookbook for LGUs (http://www.cookbook.hlurb.gov.ph/) Housing and Land Use Regulatory Board, Philippines

Jovanovic and Njegus, 2008. "The application of GIS and its components in tourism", Yugoslav Journal of Operations Research, vol. 18, no. 2, , pp. 261-272.

Kałamucki, K. and Czerny, A., 2015. Role of Cartographic Products in the Promotion of Tourism Based on the Example of Roztocze. Barometr Regionalny. Analizy i prognozy, 1, pp.145-151.

Olabintan D.D and Ajirotutu, J.O, 2012. "Application of Geographic Information System (GIS) in Tourism Mapping for Sustainable Tourism Development in Owo Local Government Area (LGA), Ondo State, Nigeria". Paper Presented on 4th International Conference on Educational and New Learning Technologies. Barcelona, Spain. Available on line at www.library.iated.org/view/OLABINTAN2012APP. Retrieved on 29th of April, 2013.

Olomo, O.R., 1993. Compilation and Dissemination of Information on Tourist Environments in Nigeria. The Role of the Cartographer Chapter 4 in Environment and Tourism in Nigeria, Edited by B.A. Chokor.

Olomo, R. O.; Enaruvbe, G. O., 2005. The role of maps in the promotion and dissemination of information on tourism in delta state, nigeria. In: INTERNATIONAL CARTOGRAPHIC CONFERENCE, 22, 2005. Anais... Spain: ICC.

Richards, B., 2003. Marketing tourist attractions How to increase attendance and revenues, POT Warsaw.

Shamim Ahmad Shah and Muzafar Ahmad Wani., 2015. Application of Geospatial Technology for the Promotion of Tourist Industry in Srinagar City. International Journal of u- and e- Service, Science and Technology Vol.8, No.1. pp.37-50.

Stanton, G., 1989. Public Information Symbol Library For Tourism and Recreational Mapping. Brisbane: Australian Key For Land Information Studies.

Trifonoff, K.M., 1999. Creativity, Art and Cartography in Geographic Education. Cartographic Perspectives. 33: 49-59.

World Tourism Organization, 1995. UNTO Technical Manual: Collection of Tourism Expenditure Statistics