MANAGEMENT AND PROMOTION OF TOURISM IN GHANA: A GIS APPROACH

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ABSTRACT

Ghana's Tourism industry is currently a leading provider of foreign exchange income for the West African country. And already government efforts are under way to support effective management and promotion of the industry. Though several attempts have been made to enhance its rapid development and promotion, these efforts have suffered some major drawbacks due to the lack of a comprehensive spatial database of tourism facilities and destinations. By using GIS, a common platform can be defined to provide a spatial databank with integrated multimedia features. This paper discusses the application of GIS and multimedia tools for archiving, analyzing and displaying of tourism information for the efficient management and promotion of the tourism industry in Ghana.

INTRODUCTION

Ghana is fast becoming a leading destination for tourists and already government efforts are under way through the Ministry of Tourism and the Ghana Tourist Board to develop and maintain this sector to become a major source of foreign exchange and revenue for development in the country. Though it is currently rated as one of the highest foreign exchange earners in the country, the potential of the tourism industry to become a leading source of foreign exchange earnings in Ghana has not been far realised. It is evident that the country's tourism potential has not been fully explored and marketed. And to augment recent efforts to develop the tourism industry, this research project was carried out to investigate how GIS and multimedia tools could be used to enhance the management and promotion of tourism in Ghana. In this project, the Central Region of Ghana was the focus area of study. This paper presents an overview of the research and includes a discussion of the tourism potential of Ghana and the potential benefits GIS could bring to the development and promotion of its tourism industry.

BACKGROUND

In the discovery of the tourism potential in the country of Ghana several attempts have been made and are still being made to enhance its rapid development and promotion. However, these attempts have experienced some major drawbacks due to:
- difficulties in updating existing graphical tourist guides and maps (expensive, tedious and time consuming),
- lack of digital spatial database of tourism facilities and destinations,

- lack of a comprehensive information base on the Internet, and
- inadequate motivation for effective marketing.

It is against this background that this project was designed to investigate how a dynamic spatial data library of tourism facilities with integrated graphical displays and audio clips could be provided. GIS was chosen as the suitable platform because the location of tourism destinations provided a common denominator to link all information related to the tourism industry. The result was not just a simple digital tourist map but also a multidimensional model of tourism information that could be made available on the Internet.

TOURISM IN GHANA

Formerly known as the "Gold Coast" of Africa, Ghana lies along the Gulf of Guinea in West Africa. Its rich history, remarkable culture, and friendly people make this tropical country a favorite destination for various international tourists. The historical sites, including 42 forts and castles dotted along its coastline dating back to the 15th century, cultural monuments, craft villages, beautiful nature parks and gardens, and sandy beaches are among the interesting features that make it a unique destination for the international tourists desiring an eventful trip to Africa. Undoubtedly, one of the most attractive aspects of Ghana's ethno-tourism is the colorful and vibrant cultural events and traditional festivities.

The country also boasts of one of the few canopy rope-walks in the world. The Kakum National Park has a canopy walkway for obtaining a panoramic view of a tropical rainforest, elephants, monkeys and other tropical species. Also spread all over the country are unique attractions for the tourist. Currently, the tourism industry ranks third, after gold and cocoa among the nation's top foreign exchange earners. Even though visitor numbers have been increasing significantly in recent years, it is believed that this is only the tip of the iceberg and that the full tourism potential of this stable, democratic, multi-cultural and hospitable nation is yet to be fully tapped.

WHY GIS?

When making decisions, planning, analysing the effect of changes, looking for patterns, etc., we may look at maps, tables, charts, lists, graphs and reports, and sometimes it is rather difficult or nearly impossible to pull all these sources of information together and make sense out of them. Geographic information systems however, have the capability to handle several kinds of information that can be related to a location or area. For example, hotels and tourist destinations all have one thing in common – location. And since the geographic position of any map feature is unique, it provides a complex link between the different data sets. The result is no longer a simple map but a complex multi-dimensional model of information.

Using GIS therefore, it becomes possible to integrate tourism information, visualize complex scenarios, present powerful ideas and derive effective solutions otherwise not possible. Besides, geographic information systems are dynamic, allowing the user to 'enter' the map to explore, enquire and analyse geographic locations and the information linked to these locations. Questions like

- where is it? (location)
- what is it? (condition)
- what if? (modelling)
- what has changed since? (trends)
- how do they occur? (patterns)

are easily answered within the context of a tourism GIS. And these are the most likely questions a potential tourist and/or investor may seek answers for in order to plan and undertake a trip or to consider to make a potential investment decision.

Also, the capabilities of GIS have made it possible to answer spatial queries using intelligent maps with integrated images, text, tables, diagrams; and showing shortest paths, location of hotels, tourist sites, price quotations, and so forth.

METHODOLOGY

The tourism GIS database was structured to follow a relational database model format. The core of the database, the spatial component, was developed using ESRI ArcInfo software while ArcView software was used as a front-end development platform for enhanced cartographic presentation and visualization. Multimedia capability was included by utilizing Avenue programming.

Creation of Spatial Database

The procedure followed in the development of the spatial database included the following:

- Acquisition of graphical maps covering the Central Region of Ghana with Cape Coast and Elmina in greater detail than other parts of the Region.
- Field checking to verify the existence of features and also their relative positions to each other (determining the reliability of the source maps).
- Converting the paper maps into digital maps by digitizing.
- Editing to remove errors.
- Creation of topology to establish relationships between the map features.
- Transformation into real world coordinates.

Cartographic Development

In order to provide enhanced cartographic representation, the digital maps were further developed using ArcView GIS software. Labels and suitable graphic symbols were assigned to the various features for easy categorization, identification and visualisation. Facilities such as roads were also classified. A composite digital tourist map was thus produced.

Attribute Data Creation and Multimedia Development

Attribute information on the various tourism facilities that were collected from different sources were linked to their respective spatial features. This involved the following steps:

- Compilation and addition of text information to feature locations in tables.
- Development and editing of pictures and images to text labels
- Hotlinking of images to their respective feature locations using Avenue scripts.
- Audio narrations on some selected features that were recorded digitally were also linked to their respective feature locations using Avenue scripts.

A hotlink to a feature on the map thus, would display an image with text in addition to audio description of that particular feature. The audio narrations would generally include a brief history of the feature, available facilities and what a potential visitor could expect to experience from a visit. Figure 1 and Figure 2 below show graphic displays of information retrieval from the database.

Finally, the maps of Cape Coast and Elmina (two towns along the coastline of Central Region) that had been developed independently were hotlinked to their respective locations on the smaller-scaled Central Region map.
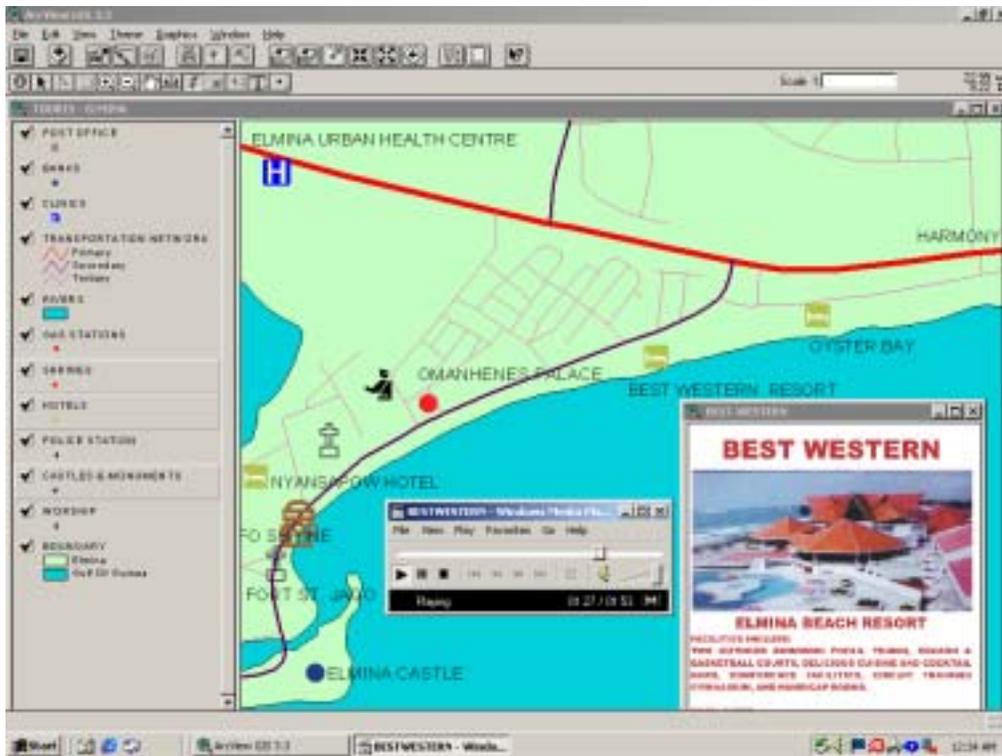
Figure 1. A hyperlink showing a concurrent display of graphics and a playback of audio description of Best Western Elmina Beach Resort.
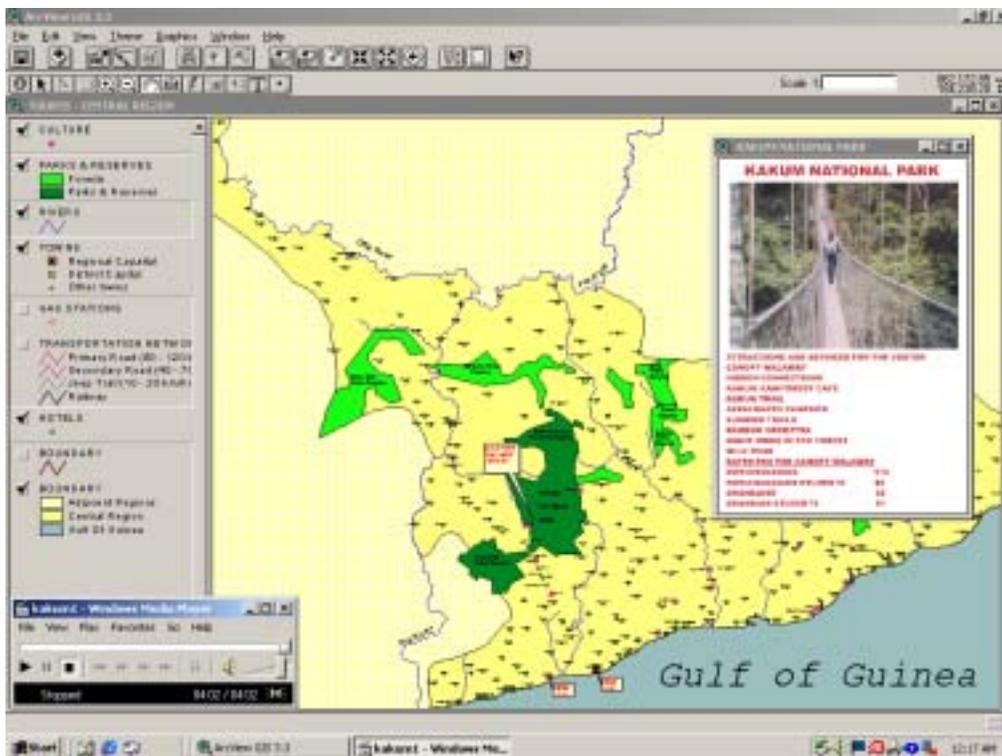
Figure 2. A hyperlink showing a concurrent display of graphics and a playback of audio description of Kakum National Park.

POTENTIAL BENEFITS OF A TOURISM GIS

An information system that is capable of answering questions about where facilities and resources are located represents enormous benefits. A geographic information system with integrated multimedia tools of the type described here could provide tourism information in an integrated fashion and will be of immense benefit not only to the Central Region but Ghana as a whole. Among the many benefits that may be realised through the system includes intelligent mapping capabilities, analytical capabilities, modelling and prediction, and revenue generation.

Intelligent Mapping

Like most other geographic information systems, the tourism GIS will have multiple functions. Some of the most attractive, from a planning perspective are intelligent and flexible mapping capabilities. The user of the system would be able to create maps of their own chosen themes, edit features in the map to suit specific requirements and purpose, and update information for existing tourism features. Thus the maps can always be kept up-to-date while still retaining the capability to create the 'historic' maps that may show the situation at some points in history. Besides, new data sets could be created and also digital data from other sources may be joined intelligently with the existing geographic data. Decision makers would be able to obtain comprehensive information about a particular site, or perhaps take "virtual trips" to facilities without leaving their desks; and these could be used as demonstrations at meetings or round table discussions to provide a more realistic assessment of current situations.

Analytical Capabilities

The ability to perform analytical operations is what makes GIS unique. It combines all the analytical capabilities of standard database systems with powerful geo-information processing tools. Simple analysis such as statistical summaries (minimums, maximums, means, and sums) and analysis of inter-relationships between various tourism related variables could be carried out in a GIS environment. For example, the data sets of historic monuments and roads could help solve the problem of finding all historic monuments along a primary road. One other significant advantage of this analytical operation is in derivative mapping. An example is in displaying the joint occurrence of hotels with tourist attractions within some distance and outputting the result of such a map as say 'Best Vacation Hotels'. The result though, not in the original database, is derived from the existing data and a set of specified relationships. It is envisaged that these powerful analytical capabilities would constitute the most important use of the tourism GIS for effective planning, marketing and monitoring of tourism facilities.

Modeling and Prediction

The beauty of an integrated computerized information system such as the tourism GIS is that future plans, projections and expectations can be modeled and their overall outcomes on the entire Tourism industry thoroughly assessed (in time and space), before they are implemented. The GIS would have comprehensive capabilities for modeling 'what-if' scenarios in the form of database and map queries. In a situation where a new facility is to be located or a new tourism development plan is to be developed, all the feasibility studies including accessibility, projected revenues and overall viability could be assessed from the desktop before implementation. Alternative outcomes could be projected, debated and revised to enable managers make informed decisions.

Revenue Generation

The tourism information system will provide an advanced platform for marketing Ghana's tourism destinations and facilities while exposing investment potentials and opportunities. Effective marketing of Ghana's tourism would promote the industry and serve to attract more visitors and subsequently, more revenue. Also, since most tourists come from outside of the country, it is envisaged the development of the tourism industry would lead to a corresponding increase in foreign exchange earnings. Besides, there would be other sources which may include revenue derived through advertising and publicity offered for hoteliers and other tourism service providers through the distribution of the system.

In terms of cost savings, the tourism information system would have the capacity to accommodate quick, convenient and easy updates. Regular updates can be done once the system has been set up, without necessarily disposing the original database established, thus making considerable savings.

CONCLUSION

This project puts GIS in tourism management and promotion in Ghana on the desktop, which when implemented would provide critical data and information required to serve the tourism market. The results of this research project have revealed that presenting tourism information in GIS in a multimedia environment would offer an unparalleled platform for the management and promotion of the tourism industry in Ghana. Tourism agencies, stakeholders and policy makers in the industry would have convenient access to comprehensive information and thus serve as a great source of motivation to boost the performance of the sector. Adequate incentive can thus be assured for efficient marketing and promotion. Moreover, difficulties in updating existing graphical tourist guides and maps could be eliminated. The process would now become less expensive, easier and less time consuming. The result of this project could serve also as input for a comprehensive information base for tourism in Ghana on the Internet.

The performance potential of GIS in the tourism industry in Ghana must therefore be given a critical look if Ghana should stay competitive in international tourism marketing. If this is done we will now be using a GIS to answer the fundamental questions that affect much of human endeavour. Where is it? And how do I get there? As these systems continue to evolve however, we would not even think about the system in terms of using a GIS but as having a geospatial problem that we desire solution for from a spatial data library. The implementation of GIS for tourism will in no doubt consolidate a statewide plan for managing and promoting the tourism industry in Ghana. Although the initial investment is high, one thing is certain: GIS will increase in importance in the tourism industry worldwide and the earlier the industry in Ghana gets involved the better it would be for its development.

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