

THE CONCEPTUAL DESIGN AND APPLICATION OF WEB-BASED TOURISM DECISION SUPPORT SYSTEMS

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Abstract

Decision support system (DSS) can be defined as an interactive computer-based information system which is designed to support and give solutions to decision problems where there is a geographic or spatial component to the decision, with interactive capabilities to improve the understanding of the problem through the use of models and data processing. Web-based DSS is a system that links decision support information or tools to decision-makers through web environment or internet. The Web-based DSS have reduced technological barriers and made it easier and less costly to make decisions that relevant to information available which geographically distributed locations. The study of decision support systems is an applied discipline that uses knowledge and especially theory from other disciplines and one of them is tourism field. Tourism is the interrelated system that includes tourists and the associated services that are provided and utilized (facilities, attractions, transportation and accommodation) to aid in their movement. The paper aims is to discuss the conceptual design and application of web-based tourism decision support system (TDSS) of Langkawi Island.

Keywords: spatial decision support system (SDSS), tourism decision support system (TDSS), Web-based GIS, Langkawi.

1. INTRODUCTION

Decision support system (DSS) can be defined as an interactive computer-based information system which is designed to support and give solutions to decision problems where there is a geographic or spatial component to the decision, with interactive capabilities to improve the understanding of the problem through the use of models and data processing (Bhatt & Zaveri, 2002; Keenan, 2003; Lee &

Huh, 2006). While many decision support systems have been used in managerial decision making, a major limitation of these systems has been their inability to exploit spatial and temporal data. Developments IT technologies such as GIS and associated technologies such as aerial and satellite remote sensing imagery, the Global Positioning System (GPS), are seen as the means of improving chances to exploit temporal and spatial data (Masron, et al., 2015a). The integration of GIS technologies and DSS has created a new type of DSS, known as the Spatial Decision Support System (SDSS). The idea of a SDSS evolved in the mid-1980s (Armstrong, et al., 1986), and by the end of the decade SDSS was included in an authoritative review of the GIS field (Densham, 1991). By the early 1990s, SDSS had achieved a recognized place in the GIS community and was acknowledged as a growth area in the application of GIS technology by Muller (1993).

The development information technology changes the world. The new information technologies (IT) known as spatial information technology, which the field obtains, manages and analyses data that have geographic, temporal, and spatial context. With the integration of decision support system, GIS and internet, new technologies known as Web-based DSS emerged. The Web-based DSS provides tools for persuasion that aid in negotiation and coordination across the organizational boundaries. Mahmassani and Chen (1993) investigated the reliability of information on prevailing trip times on the links of a network as a basis for route choice decisions by individual drivers. Ceder & Sarvi (2007) presented an analysis framework and formulation for designing and evaluating passenger ferry routes by using a methodology that combined the philosophy of mathematical programming approaches and decision-making techniques. Li & Ou (2011), design a prototype of web-based sea ice information system (WebSIIS), in order to allow easier visualization and visual analysis of the sea ice data from the CIS ice archive and also for the convenient sea ice data access in terms of data extraction, data packing and data downloading. Another prototype design by Rao, et al. (2006) which integrates a mapping component Automated Feature Information Retrieval System (AFIRS) and a modeling component Soil and Water Assessment Tool (SWAT), named CRP-DSS that use in resource management and assessment of environmental quality. The Web-based also use for public health care. In Zaria Metropolis, a web-based E-health system was designed and implemented in public health care system environment that could be used to locate the nearest hospital, specifying the service they rendered and aid in decision making by providing chances for the healthcare practitioners to gain access to information that can aid in the diagnosis of patient's health conditions or the development of suitable treatment plans (Abdullahi, et al., 2010).

Decision making and planning in tourism development is complex since it's involve various stakeholders, thus requires tools that aid in effective decision making to come to terms with the