

Chapter 3

DSS for Web Mining Using Recommendation System

Varaprasad Rao M

Anurag Group of Institutions, India

Vishnu Murthy G

Anurag Group of Institutions, India

ABSTRACT

Decision Supports Systems (DSS) are computer-based information systems designed to help managers to select one of the many alternative solutions to a problem. A DSS is an interactive computer based information system with an organized collection of models, people, procedures, software, databases, telecommunication, and devices, which helps decision makers to solve unstructured or semi-structured business problems. Web mining is the application of data mining techniques to discover patterns from the World Wide Web. Web mining can be divided into three different types – Web usage mining, Web content mining and Web structure mining. Recommender systems (RS) aim to capture the user behavior by suggesting/recommending users with relevant items or services that they find interesting in. Recommender systems have gained prominence in the field of information technology, e-commerce, etc., by inferring personalized recommendations by effectively pruning from a universal set of choices that directed users to identify content of interest.

INTRODUCTION: DECISION SUPPORT SYSTEM

A decision support system (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization (usually mid and higher management) and help people make decisions about problems that may be rapidly changing and not easily specified in advance. i.e. Unstructured and Semi-Structured decision problems. Decision support systems can be either fully computerized, human-powered or a combination of both. While academics have perceived DSS as a tool to support decision making process, DSS users see DSS as a tool to facilitate organizational processes (Keen, 1980). Some authors have ex-

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tended the definition of DSS to include any system that might support decision making. Sprague (1980) defines DSS by its characteristics:

- DSS tends to be aimed at the less well structured, underspecified problem that upper level managers typically face.
- DSS attempts to combine the use of models or analytic techniques with traditional data access and retrieval functions.
- DSS specifically focuses on features which make them easy to use by non-computer people in an interactive mode.
- DSS emphasizes flexibility and adaptability to accommodate changes in the environment and the decision making approach of the user.

DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions. The common thread of articles published in *Decision Support Systems* is their relevance to theoretical and technical issues in the support of enhanced decision making. The areas addressed may include foundations, functionality, interfaces, implementation, impacts, and evaluation of decision support systems (DSSs). Manuscripts may draw from diverse methods and methodologies, including those from decision theory, economics, econometrics, statistics, computer supported cooperative work, data base management, linguistics, management science, mathematical modeling, operations management, cognitive science, psychology, user interface management, and others. However, a manuscript focused on direct contributions to any of these related areas should be submitted to an outlet appropriate to the specific area [Elsevier]. Examples of research topics that would be appropriate for *Decision Support Systems* include the following:

1. DSS Foundations
 - a. Principles, concepts, and theories of enhanced decision making; formal languages and research methods enabling improvements in decision making
 - b. It is important that theory validation be carefully addressed.
2. DSS Functionality
 - a. Methods, tools, and techniques for developing the functional aspects of enhanced decision making; solver, model, and/or data management in DSSs; rule formulation and management in DSSs; DSS development and use in computer supported cooperative work, negotiation, research and product
3. DSS Interfaces
 - a. Methods, tools, and techniques for designing and developing DSS interfaces; development, management, and presentation of knowledge in a DSS; coordination of a DSS's interface with its functionality
4. DSS Implementation
 - a. Experiences in DSS development and utilization; DSS management and updating; DSS instruction/training
 - b. A critical consideration must be how specific experiences provide more general implications.
5. DSS Evaluation and Impact
 - a. Evaluation metrics and processes; DSS impact on decision makers, organizational processes and performance

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