

# *BOOK REVIEW*

## **DECISION SUPPORT SYSTEMS: Concepts and Resources for Managers**

By **Daniel J. Power**

QUORUM BOOKS, Westport, 2002, 252 p.+ XIII

Decision Support Systems (DSS) are interactive information systems meant to help managers and their staff analysts to make and take good decisions. The DSS concept was promoted in the late '70s by various IT vendors, practitioners and academia people in order to overcome the dissatisfaction of users that tried to use the information systems of that time in the process of decision making. In spite of early doubts about the new concept, the DSS movement has relentlessly produced new methodological and practical solutions and results in an effort to integrate the new information technologies and to consider field experiences. At the present time DSS integrate various information technologies such data bases, models, artificial intelligence techniques and computer-based communication.

In the '80s a series of valuable books were published with a view to explaining the DSS concepts and setting a specific methodology. Since then several new issues such as Group DSS, Expert DSS, Data Warehousing and Data Mining, and Web-based DSS have been considered by practitioners and academic circles. Consequently a few books were published in the '90s to reflect the new developments. Also a number of portals containing knowledge resources have been developed. One of the most important portals has been set up and maintained by Professor Daniel J. Power of University of Northern Iowa. This portal ([www.dssresources.com](http://www.dssresources.com)) has been a rich source of information and knowledge for this reviewer since 2000. Recently, Professor Power produced a book to contain the most significant and up-to-date information and knowledge to be found in his portal as well as to integrate his original methodological results and practical experiences. It is worth remarking that an early version of the book has been freely available on Professor Power's portal. The book is apparently primarily meant for managers and system analysts with the view to helping them understand the new concepts and the competitive advantage of DSS and the technologies available.

**Chapter 1** aims at giving a general view of the DSS domain. It contains a brief record of historical developments, places the DSS and their applications in the context of other information systems and proposes an original conceptual framework of DSS building upon the well-known taxonomy introduced by Alter more then 20 years ago. The next two chapters address the decision-making aspects and the usage of the DSS.

**Chapter 2** shows how DSS may create a competitive advantage in the context created by the recent developments in the IT field. Relevant and convincing examples of effective applications are given and the opportunities, benefits, limitations, and risks of DSS are identified.

**Chapter 3** analyses the decision making process and shows how a DSS can help to increase the "frequency" of good managerial decisions and defines the situations that are likely to benefit from a DSS implementation. Having presented credible arguments for the need and opportunity of DSS, the author presents in the next two chapters several specific issues concerning the development process of the systems.

**Chapter 4** adopts the decision-oriented approach of Stabell in the design and development process. The chapter starts with a description of the methods used to diagnose the current managerial decisions and reviews the steps to prepare the feasibility study. The three basic system development approaches ("rapid prototyping", "end-user system development" and "life cycle based approach") are discussed and several actors involved in the development process are identified.

**Chapter 5** addresses the development and evaluation aspects of the user interface, the most specific and critical component of a DSS. The chapter reviews several well known user interface styles (such as "command-line", "menu", GUI and "question-and-answer") together with the celebrated "ROMC" design approach of Sprague and Carlson. Several valuable guidelines and requirements for the interface design are given eventually in a concise and clear manner.

The remaining part of the book is devoted to DSS technology **Chapter 6** presents architecture, networking, and security aspects. Having reviewed the main components of the system architecture, the author briefly describes some networking basic issues and thoroughly analyses the available solutions for security issues.

**Chapter 7** highlights the implementation aspects to support communication, collaboration and a shared decision-making process. Beside well-established concepts on group decision-making, several rather new aspects concerning the requirements of virtual organizations are reviewed.

**Chapter 8** addresses those DSS meant to help the manager to exploit the information contained in the numerous and large databases and document repositories. It compares data and document driven systems and reviews several rather recent solutions such as OLAP, EIS, and Spatial DSS.

**Chapter 9** contains a presentation of a frontier type of DSS namely knowledge-driven systems and data mining. Several artificial intelligence technologies such as rule-based systems, artificial neural networks, case-based reasoning, and genetic algorithm are reviewed and relevant application examples and valuable Internet addresses are provided.

The class of frequently utilized model - driven DSS is considered in **Chapter 10**. The types of possible applications are reviewed. Also some well established decision analysis methods such as "Analytical Hierarchy Process" and decision trees as well as forecasting, optimization, and simulation models and the possibility to use spreadsheets to support the modeling process are presented.

**Chapter 11** addresses another frontier in the DSS field namely the use of the modern web technology to build any type of DSS and especially advanced interorganisational decision support systems. It reviews a series of examples of software products and implementations.

**Chapter 12** is primarily intended for managers and contains several issues concerning the evaluation process of DSS implementation projects such as: tools, criteria used, cultural, ethical, and privacy aspects. A readiness audit questionnaire, a user - centered design checklist and a rich glossary of terms are included as appendices to the book. The book is concise, highly informative, up-to-date, pleasant to be read, usable and useful for managers and for DSS analysts as well. The novice in the DSS field can utilize the book as a sound introductory text in the DSS discipline, it is an excellent starting point for his/ her systematic and deeper study of various particular subjects. A reader already familiar with some DSS aspects can benefit from this book in his/her efforts to up-date and systematize the knowledge he/she has acquired so far. This book is definitely a timely work.

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