

Preface

Today, at the turn of the 21st century, many managers are using computers, business databases, and models to help make decisions. This is a positive change in behavior, and some evidence indicates the use of computers to support management decision making is entering a new and more sophisticated stage. The novelty of managers using computers is wearing off, and, more importantly, the capabilities of our support systems are beginning to match the expectations of managers. Decision Support Systems (DSS) are now both a business necessity and an opportunity to gain competitive advantage. This book tries to build on these positive changes and provide an updated exploration of computerized decision support systems.

Decision Support Systems: Concepts and Resources for Managers is only one part of an innovative knowledge resource for people interested in learning more about DSS. It is an extension and integration of materials at DSSResources.COM. The idea is to develop a book that is strong on concepts and theory with timely and up-to-date application examples, integrated with Web-based materials.

MISSION, AUDIENCE AND OBJECTIVES

The mission of both the book and DSSResources.COM is to help people increase their knowledge of how to use information technologies and software to improve decision making. The primary target audience is managers interested in investigating innovative Decision Support Systems.

My perspective at DSSResources.COM and in this book is both managerial and technical. In writing the chapters and collecting resources, my overriding concern has been to help people gain capabilities, knowledge, and skills that they can apply as they use and manage information systems and technologies. Some readers can apply the knowledge in this book to help build a DSS. Some

readers may want to read additional, specialized books and work as decision support analysts; some may be assigned to DSS project teams; and others may help in managing a DSS or in training DSS users.

The primary focus of this book is helping people develop intellectual capabilities related to the design and development of DSS. The book also explores how DSS can support organization goals and how DSS impact organizations and managers. Throughout the book, DSS are defined broadly as interactive computer-based systems that help people use computer communications, data, documents, knowledge, and models to solve problems and make decisions. DSS are ancillary or auxiliary systems; they are not intended to replace skilled decision makers.

This book examines the design, development, and implementation of systems that support management decision making. The focus is on technology-based systems. After completing *Decision Support Systems: Concepts and Resources for Managers*, readers should:

- Have a more sophisticated understanding of how a DSS can help a company meet its objectives, including gaining a competitive advantage, increasing revenues and profits, decreasing expenses, providing better customer service, and improving decision making;
- Be better informed consumers of DSS and information technology resources, especially for end-user development of DSS applications;
- Know more about the Internet, the World Wide Web, its potential uses to support decision making, and its impact on decision behavior;
- Have more capabilities related to DSS design and development; and,
- Understand that Decision Support Systems are intended to support rather than replace decision makers.

The emphasis throughout the book is on making sense of a rapidly changing computing applications area. Both descriptive and prescriptive ideas are linked to an expanded component-driven DSS framework. The focus is heavily oriented to practice and applications, but, when possible, empirical results and theory are referred to in an attempt to create a more enduring context for the conclusions. Also, every effort has been made to find examples that are current and understandable.

In general, this is an “applications” book more than a “theory” book. It provides enough concrete detail to help people understand their experiences using DSS, and it has suggestions for people involved with DSS projects. Also, the book provides the knowledge and framework needed by people who want a general familiarity with current developments and with “what is possible.”

OVERVIEW OF THE CONTENTS

Decision Support Systems: Concepts and Resources for Managers has 12 chapters. Chapter 1, titled “Supporting Business Decision Making,” provides a rationale for studying about and understanding DSS and presents an expanded

framework for categorizing DSS. Also, the chapter explains the differences between transaction processing systems and DSS.

“Gaining Competitive Advantage with Decision Support Systems” is the focus of Chapter 2. After reviewing some technology trends that provide new opportunities for building DSS, the chapter discusses how DSS can create a competitive advantage. A few classic examples of DSS that provided companies with a competitive advantage are summarized in the chapter.

Understanding business decision making and business decision processes is the key to building an effective DSS. Chapter 3, titled “Analyzing Business Decision Processes,” explains fundamental concepts related to business decision making.

Chapter 4, “Designing and Developing Decision Support Systems,” is a pivotal chapter that changes the focus of the book to more technical issues. Once the topic of building and buying DSS is raised and discussed in Chapter 4, the next chapter addresses the topic of greatest importance to DSS success, the user interface. In Chapter 5, “Designing and Evaluating DSS User Interfaces,” various types of user interfaces are briefly reviewed. The goal is to examine guidelines for DSS user interfaces.

Chapter 6 is titled “Understanding DSS Architecture, Networking, and Security Issues,” and it attempts to present a simplified introduction to extremely complex technical topics. The topics in this chapter are important for management-oriented and more technically savvy readers.

Chapters 7 through 11 provide more details and examples related to the categories in the expanded DSS framework. Each chapter provides a survey of what is possible and an introduction to technical issues for making an innovative DSS a reality. Chapter 7 focuses on “Implementing Communications-Driven and Group Decision Support Systems;” Chapter 8 is titled “Building Data and Document-Driven Decision Support Systems;” Chapter 9, “Building Knowledge-Driven DSS and Mining Data,” examines two related technologies, management expert systems and data mining. Chapter 10 discusses “Building Model-Driven Decision Support Systems;” Chapter 11, titled “Building Web-Based and Interorganizational Decision Support Systems,” examines the latest developments in decision support.

The concluding chapter of *Decision Support Systems: Concepts and Resources for Managers* is titled “Evaluating Decision Support System Projects.” After reading the prior chapters, managers and aspiring managers may have some novel or interesting ideas for DSS. So, this chapter reviews and discusses tools and issues associated with evaluating proposed DSS projects. This book also includes a decision support readiness audit and a glossary of key decision support system terms.

Acknowledgments

This book is an evolutionary product of 35 years of research and theory development about Decision Support Systems. In particular, the prior work of Steven Alter, Eric Carlson, Gordon Davis, Vasant Dhar, Paul Gray, George Huber, Peter Keen, Michael S. Scott Morton, Ben Shneiderman, Ralph Sprague, Charles Stabell, Efraim Turban, and Hugh Watson have significantly impacted my thinking about DSS. I want to thank them, but the responsibility for misinterpreting or misunderstanding their perspectives and ideas is mine.

No book is possible without the help, assistance, and encouragement of many people. That is especially the case for *Decision Support Systems: Concepts and Resources for Managers*. My family, especially my wife Carol and my sons Alex, Ben, and Greg, have been an extraordinary help. Alex has been especially involved in the production of the various versions of the book. He has been an outstanding operations manager.

The staff at Greenwood Publishing and Quorum Books have been supportive and encouraging in completing this project. My editor Eric Valentine especially deserves my thanks for his persistence in making this project a reality. I also want to acknowledge the help of Nicole Cournoyer, Marsha Goldstein, and Margery Heffron.

Many students have helped with comments, research on content issues, and proofreading. I want to particularly acknowledge Nikole Hackett, Lucian Strong, Saksatit Svetarundra, Andrea Putman, and John Ting. Lucian brought his enthusiasm and curiosity to the project. Nikole helped with researching some case study examples and contributed some important ideas and materials that influenced my thinking on DSS and competitive advantage. Saksatit read chapters and influenced my thinking on model-driven DSS. Andrea worked on formatting and production of some materials. John worked on proofreading, research tasks, creating some figures, and creating the subject index.

My DSS colleagues who have sent me email and commented on materials at DSSResources.COM also deserve my thanks. I want to especially thank my colleagues in the University of Northern Iowa MIS group, Gary Baker, Shashidar Kaparathi, Rex Karsten, Roberta Roth, and Leslie Wilson. Their encouragement and support for this project has made the effort much easier. Finally, I want to especially thank my colleagues Garrett A. Bozylinsky, Janyl Mukashova, and Gerald F. Smith. Their comments and suggestions about an earlier version of the book were both useful and stimulating.

I also want to thank my contacts at the following vendors who provided me information that has helped in the development of this book: Alphablox, Inc., arcplan, Artemis Intl., Brio, Inc., Business Objects, Inc., Comshare, Inc., DataBeacon, Inc., Decisioneering, Inc., Dimensional Insight, Inc., Expert Choice, Inc., Facet Decision Making, Microstrategy, Inc., Nucleus Research, and Palisade Corp.

Decision Support Systems: Concepts and Resources for Managers is the product of more than five years of effort. Versions of the chapters have been used in a specialized course in DSS for undergraduate MIS majors and in more managerial MIS courses for MBA students and senior undergraduate business majors. My students who have used various drafts of the book deserve special thanks for their patience and goodwill.