Chapter 3.9
Decision Support Software

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INTRODUCTION

Throughout the years many have argued about different definitions for DSS; however they have all agreed that in order to succeed in the decision-making process, companies or individuals need to choose the right software that best fits their requirements and demands. The beginning of business software extends back to the early 1950s. Since the early 1970s, the decision support technologies became the most popular and they evolved most rapidly (Shim, Warkentin, Courtney, Power, Sharda, & Carlsson, 2002). With the existence of decision support systems came the creation of decision support software (DSS). Scientists and computer programmers applied analytical and scientific methods for the development of more sophisticated DSS. They used mathematical models and algorithms from such fields of study as artificial intelligence, mathematical simulation and optimization, and concepts of mathematical logic, and so forth.

A DSS is an interactive computer-based system or subsystem intended to help decision makers use communications technologies, data, documents, knowledge and/or models to identify and solve problems, complete decision process tasks, and make decisions (Druzdzel & Flynn, 1999). The concept of decision support has evolved from two main areas of research: the theoretical studies of organizational decision making done at the Carnegie Institute of Technology during the late 1950s and early 1960s, and the technical work on interactive computer systems, mainly carried out at the Massachusetts Institute of Technology in the 1960s (Finlay, 1994). In the middle and late 1980s, executive information systems (EIS), group decision support software (GDSS), and organizational decision support software (ODSS) evolved from the single user and model-oriented DSS (Huber, 2006).

BACKGROUND

DSS plays a different role in many fields of business today. It helps companies ranging from automobile to healthcare to telecommunications make and implement strategies best suited to service their consumers. Some of the solutions that DSS provides are activity-based management, compliance, financial intelligence, cost benefit analysis, forecasting, simulation, risk management, and Web analytics to name a few. DSS also helps with data integration; it assists with the migration and synchronization of data used to assist companies in the decision-making process.

For the reason of the lack of one generic model of decision making, the concept of DSS is extremely broad and its definitions vary depending upon the author's point of view and are strongly dependent on the DSS application context. A DSS can take many different forms, and the term can be used in many different ways. Despite DSS being such a helpful tool in organizations not all organizations benefit from owning this type of software. Many of the company's purchasing software do not meet the organizations goals or address core decision-making situations. This is why researching the proper DSS is a key element in the success of the software in the company. This however is not the only element required for DSS to effectively work in an organization. There must be proper knowledge and use of the software on the part of the users. If the user mishandles the software, it will provide the user with an inaccurate decision which will only cause more problems.

DSS has been present in articles and work environments for years, more recently new software has been added on a constant basis. The software was ultimately designed to help employees in all fields gain confidence about their decisions while using the software as a guide. The software programs can perform tasks that vary from advice to developing diagnosis for illnesses to calculating costs for a project. These software packages can be classified according to the function or activity they engage into. The following is a brief description of each classification, which will be discussed in detail providing all advantages such software offers and how and why it is beneficial to all who use it.

MAIN FOCUS

Holsapple and Whinston (1996) suggested that a DSS can be classified as text-oriented, database-oriented, spreadsheet-oriented, solver-oriented, rule-oriented, and/or compound (or hybrid). Power (2003) classified five categories—model-driven, communication-driven, data-driven, document-driven, and knowledge-driven—and identified three different user levels as passive, active, and cooperative. In terms of support scope, we can see personal, group, and organizational support. Also, it may be either custom-made or ready-made systems. While DSS technology has been growing and has aided many, there are still some shortcomings of the software.

Model-Driven Software

A variety of model-driven software can be found in the market used by private and public sectors in different departments and areas. This kind of software, once called *computationally-oriented* software, can be adopted by any company that wishes to manipulate statistical, financial, optimization, and/or simulation models in order to combine information from different sources and make effective decisions that will generate higher production and/or profits.

Along the lines of Twery and Hornbeck (2001), *NED* (NorthEast Decision model) is a group of software products that supports managers develop goals, assess current and future conditions, and produce management plans for forest properties. *NED* was developed by USDA Forest Service, and

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