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Chapter II

Categorizing Decision Support Systems: A Multidimensional Approach

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ABSTRACT

This chapter summarizes a multidimensional approach to categorizing specific decision support systems (DSS) developed in Power (2002) and related works. The suggested approach or expanded framework emphases evaluates DSS in terms of one primary dimension and three secondary dimensions. Managers and analysts need to examine what drives the DSS and provides the dominant functionality of the system. Then a DSS can be further categorized in terms of targeted users, purpose of the system and primary deployment technology. The framework can improve discussions about DSS and assist in organizing our current knowledge about DSS.

INTRODUCTION

To some people, a discussion of categories or types of decision support systems may seem largely an academic exercise. To others such discussions have the potential to improve our understanding of these important computerized systems intended to support decision making. The need for typologies and especially "new" typologies is an ongoing debate in many disciplines. But classifying things has been occurring in science for hundreds, if not thousands, of years. In general, classification helps create order and helps the classifier and others using a framework transmit information to those interested in the phenomenon. A classification scheme or

framework can help one view the world more systematically. A number of DSS typologies have been proposed in the past 30 years, but technology developments and new applications suggest that an expanded framework is needed. Also, an expanded framework can help decision makers and DSS developers explain and categorize potential DSS projects as well as existing decision support systems. A rigorous, clearly defined conceptual framework can provide guidelines for making such categorizations.

This chapter summarizes and discusses a multidimensional framework for categorizing DSS based on four characteristics: 1) the dominant component and driver of decision support, 2) the targeted users, 3) the specific purpose of the system and 4) the primary deployment technology. The goal of the chapter is to help people categorize decision support systems using the expanded, multidimensional conceptual framework proposed by Power (1997, 2000, 2001, 2002). This framework has also been discussed in the electronic newsletter DSS News and at the Web site dssresources.com.

BACKGROUND

Researchers in many fields have worked to develop meaningful typologies that help organize our knowledge about the world. Their experiences suggest that gaining acceptance of a new framework is often difficult and controversial. Hall (1972), in a review of organization typologies, argued that many classification schemes are an oversimplification of the observed phenomenon and only focus on a single characteristic. He argues the "essence of the typological effort really lies in the determination of the critical variables for differentiating the phenomena under investigation" (p. 41).

Efforts to develop taxonomies or typologies can be based either on deduction or induction. Typologies based on induction are often derived from empirical research. The framework summarized in this article has been developed deductively. The initial focus was on using the characteristics and critical variables in prior classification schemes to create a more comprehensive framework. A number of questions were addressed: What characteristics are relevant to creating a typology of decision support systems? What are the critical characteristics that differentiate one decision support system from another? What characteristic makes a DSS a member of a specific category of decision support systems? Are the variables in the framework important for building successful DSS? Finally, can one measure or evaluate the variables when examining a specific DSS?

The terms frameworks, taxonomies, conceptual models and typologies are often used interchangeably. Taxonomies classify objects and typologies show how mutually exclusive types of things are related. The general desire is to create a set of labels that help people organize and categorize information. Sprague and Watson (1996) argued typologies, frameworks or conceptual models are "often crucial to the understanding of a new or complex subject." A good framework shows the parts of