Can DSS impact decision outcomes?

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Building a computerized decision support system does not necessarily improve decision outcomes. Sadly, a poorly constructed DSS can actually reduce decision quality. In some cases a DSS has little impact on decision outcomes, but it may have other desirable benefits like faster decision making or reduced training costs for new decision makers. Some DSS actually increase the likelihood targeted users will make "good" decisions. At issue is defining decision success and understanding how DSS can improve decision processes or the information content in a situation and hence help users make more "good" decisions and have better outcomes.

Good decisions are the ones that resolve a problem that has been identified or that result in the best possible outcome in a situation. Many decisions do not have this intended outcome. No manager always makes the right decision. Factors that are unforeseeable or over which the decision maker has little or no control assure some wrong decisions, for example, bad weather, disease, changing economic conditions, false information received, bad luck and changes in laws and regulations. One hopes a well-constructed DSS positively impacts decision outcomes and increases the likelihood of "good" decisions.

According to Trull (1966), the success of a decision is a function of its quality and of how it is implemented. Decision quality is judged by a decision's compatibility with existing constraints, its timeliness, and its incorporation of the optimal amount of information. A successful implementation of a decision results when managers avoid conflict of interest, make sure the decision is understood by those who must carry it out, and perceive the rewards of successful implementations are worth the risks of implementing the decision. Decision success is a measure of whether objectives sought when making a decision have been partially or completely attained.

The distinction between effectiveness of decision-making and efficiency in decision-making helps DSS analysts understand the impact of DSS on decision behavior. Keen and Scott Morton (1978) present the following explanations of these important concepts: "Effectiveness in decision-making requires us to address the process of identifying what should be done. ... Efficiency in decision-making addresses the means for performing a given defined task in order to achieve outputs as well as possible, relative to some predefined performance criteria."

Increasing efficiency typically takes the form of minimizing time, cost or effort to complete a decision making activity. Effectiveness focuses on what activities should occur, improving the decision
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process, and/or on improving information used for decision making, especially facts and content used in the decision process. A focus on effectiveness requires decision-makers to adapt and learn, to make a responsive adjustment to changes in the environment for and within which they make decisions (after Bennett 1983, p. 2). "Good" decisions are more effective decisions and hence DSS should improve content used by a decision maker and/or improve the decision process used to positively impact decision outcomes.

There are some known impediments to "good" decisions about which a decision maker and DSS designer do have some control and which a well constructed DSS can reduce. Some examples include decision making bias, lack of experience making a specific decision, lack of knowledge and information, and improper use of decision aids and computerized systems.

Approaching decision situations and decision alternatives with prejudice means that an otherwise good alternative is not given serious consideration because of bias. Decision bias may reflect a fear of change, learned behavior, cognitive limitations and even fear of failure. Comfort with the status quo and confidence in what has worked before are understandable. But when bias prevents brainstorming for new ideas, consideration of novel ideas, fear of making mistakes and experimenting with new ideas, then decision biases are impediments to "good" decision-making. This impediment can hinder the implementation of novel DSS and it is difficult to construct a DSS to reduce decision making biases. Managers and DSS designers need to be conscious of the problem of bias and overcome it as best they can. (See Power, September 11, 2005.)

For most decisions, but especially recurring decisions, knowledge and experience are very important. DSS can capture some managerial knowledge and reduce the impediment of inexperience with a decision task and lack of information and knowledge.

It is discouraging to realize that some of the decision aids and DSS that have been created and implemented in organizations have actually hindered "good" decision-making. DSS can provide a false sense of confidence that information is complete or that data is accurate. Completeness and accuracy of decision relevant information are important concerns of a DSS analyst. These attributes of information are not guaranteed because the data is stored in a DSS. DSS need to be appropriately designed to positively impact decision outcomes. In any decision support system, it remains difficult to support analysis of subjective and qualitative issues; managers are usually encouraged to place the greatest emphasis on modeling and quantifying a decision analysis; also DSS usually and correctly neglect organizational political issues; and DSS users may not explicitly consider their values and may fail to explicitly use their general knowledge and common sense in situations. So in some situations constructing a DSS may actually negatively impact decision outcomes.
Nobel Laureate Herbert Simon (1965) argued we need to understand the thought process that computerized decision aids will support if we are to create effective support systems. Our understanding of decision and thought processes remains incomplete and we need to be especially cautious in assessing when and how a DSS will be used prior to its design and implementation. Effective decision oriented analysis and design helps insure that a DSS positively impacts decision outcomes.

References


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