1.2: Decision Support Systems

Decision Support Systems

A decision support system (DSS) is an information system built to help an organization make a specific decision or set of decisions. DSSs can exist at different levels of decision-making with the organization, from the CEO to the first-level managers. These systems are designed to take inputs regarding a known (or partially-known) decision-making process and provide the information necessary to make a decision. DSSs generally assist a management-level person in the decision-making process, though some can be designed to automate decision-making.

An organization has a wide variety of decisions to make, ranging from highly structured decisions to unstructured decisions. A structured decision is usually one that is made quite often, and one in which the decision is based directly on the inputs. With structured decisions, once you know the necessary information you also know the decision that needs to be made. For example, inventory reorder levels can be structured decisions: once our inventory of widgets gets below a specific threshold, automatically reorder ten more. Structured decisions are good candidates for automation, but we don’t necessarily build decision-support systems for them.

An unstructured decision involves a lot of unknowns. Many times, unstructured decisions are decisions being made for the first time. An information system can support these types of decisions by providing the decision-maker(s) with information-gathering tools and collaborative capabilities. An example of an unstructured decision might be dealing with a labor issue or setting policy for a new technology.

Decision support systems work best when the decision-maker(s) are making semi-structured decisions. A semi-structured decision is one in which most of the factors needed for making the decision are known but human experience and other outside factors may still play a role. A good example of an semi-structured decision would be diagnosing a
medical condition (see sidebar).

As with collaborative systems, DSSs can come in many different formats. A nicely designed spreadsheet that allows for input of specific variables and then calculates required outputs could be considered a DSS. Another DSS might be one that assists in determining which products a company should develop. Input into the system could include market research on the product, competitor information, and product development costs. The system would then analyze these inputs based on the specific rules and concepts programmed into it. Finally, the system would report its results, with recommendations and/or key indicators to be used in making a decision. A DSS can be looked at as a tool for competitive advantage in that it can give an organization a mechanism to make wise decisions about products and innovations.

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**Sidebar: Isabel – A Health Care DSS**

A discussed in the text, DSSs are best applied to semi-structured decisions, in which most of the needed inputs are known but human experience and environmental factors also play a role. A good example that is in use today is Isabel, a health care DSS. The creators of Isabel explain how it works:

Isabel uses the information routinely captured during your workup, whether free text or structured data, and instantaneously provides a diagnosis checklist for review. The checklist contains a list of possible diagnoses with critical “Don’t Miss Diagnoses” flagged. When integrated into your EMR system Isabel can provide “one click” seamless diagnosis support with no additional data entry. [5]