

: *How does organization level impact decision support?*

by Dan Power

Editor, DSSResources.com

A wide variety of managerial decisions are made in each organization's hierarchy. Many of those decisions need appropriate decision support. Sadly decision support systems (DSS) often exist in functional stovepipes, some systems are standalone with redundant databases, and some decisions are poorly supported or not supported. Vendors market tactical and operational business intelligence and some DSS supposedly provide strategic decision support. Anthony (1965) classified decisions into four categories associated with organization levels: Strategic Planning, Management Control, Operational Control, and Operational Performance. What is the impact of level on DSS?

Nobel Laureate Herbert Simon (1945; 1973) noted managers at the top level of the hierarchy make "what" decisions and those at the bottom make "how" decisions. Senior managers make decisions with a higher value component, managers at lower levels make decisions with a higher factual component. Managers do not make all of their decisions as part of a deliberate, coherent and continuous decision making process (cf., Mintzberg, 1973). Instead, brevity, variety, and fragmented activities characterize a manager's typical workday. Managers serve general decisional roles as entrepreneur, resource allocator, and negotiator.

For managers at all levels, but especially senior managers, decision making is a dynamic process. At the Strategic Planning level decision making is complex and at times ambiguous. Decision makers at all levels can encounter information search problems and detours, delayed feedback of results, uncertainty, ambiguity and in some cases conflict during decision making.

We can model organization structures as a multi-level hierarchy and examine decisions and appropriate decision support for each level. Let's examine Anthony's (1965) four hierarchical level:

The top level, Strategic Planning, involves decision processes related to allocating resources, controlling organizational performance, establishing broad policies, and

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evaluating capital investment or merger proposals. Decision support needs to help managers envision the future and negotiate solutions with stakeholders. Senior managers need a high level, aggregated view of key performance indicators. Model-driven DSS can assist in some "what if?" analyses.

Management Control focuses on decisions like acquisition and use of resources by operating units; introduction of new products; and R&D project expenditures. These are still "what" decisions, but existing goals and strategies provide criteria for choices. This level has a shorter time horizon for performance monitoring and needs more document-driven decision support.

Operational Control tactical decisions impact the short-run effectiveness of organizational actions; often involve monitoring product/service quality; and usually focus on assessing product/service needs. Decision support is a mix of incremental adjustment "what" decisions and more immediate "how" decisions. Data may need to be updated daily or weekly depending upon decision cycle time. Documents, dashboards and control metrics are especially important in DSS built for this level. Some collaborative support can be useful at this level, especially within levels of the hierarchy for quick consultation and approval (Mintzberg et al, 1977).

The front-line, customer level decisions, Operational Performance, include all of the day-to-day decisions made in functional units by managers to implement short-term goals, produce outputs and operate the organization. Data-driven decision support often needs to be real-time with detailed data. Collaboration is usually not important at this level, information systems capture transactions and that data is aggregated for operational control. Also, this level may benefit from knowledge-driven, model-driven and document-driven DSS. Also, decision automation can increase the speed and accuracy of some decisions at this level.

Anthony's decision level hierarchy model can help DSS developers identify opportunities to intervene in decision making activities and processes and potentially improve decision making effectiveness and other metrics of decision making success (cf., Power, 2004).

A hierarchical organization should have multiple computerized decision support systems. Decision support needs to be analyzed from an enterprise perspective across the hierarchy. Then steps must be taken to fill gaps, add systems and expand the unidimensional hierarchical

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capabilities into an integrated, decision support pyramid. Modern, complex organizations benefit from more integrated decision support systems (DSS).

Decision support can broaden the traditional unidimensional hierarchy into more of a decision pyramid. DSS can connect the decision making stovepipes by supporting cross functional teams and by providing cross divisional and cross functional information system access. Well designed DSS can overcome the extremely rigid information systems found in many bureaucratic organizations. A formal organization of divisions, departments, positions, jobs, and tasks is necessary and well designed DSS can make these structural elements more agile and responsive to a rapidly changing environment.

The scope of organizational and managerial decision making is very broad. Decisions are made by individuals at all levels in an organization and by a wide variety of groups in an organization. Both managers and DSS analysts need to analyze decision support needs and distinguish among them in terms of who participates, the type of decision and other situational factors. From a decision support analyst's perspective, decisions are part of an ongoing process of evaluating alternatives to select one or some combination of alternatives that will attain a desired end. More integrated DSS need to support specific choice points and entire decision processes across an organization hierarchy.

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Author: Daniel Power

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