: How does organization level impact decision support?

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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

evaluating capital investment or merger proposals. Decision support needs to help
managers envision the furture 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

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.

References

Anthony, R.N., Planning and Control Systems: A Framework for Analysis. Cambridge, MA: Harvard University, 1965.

Mintzberg, H., The Nature of Managerial Work, New York: Harper and Row, 1973.

Mintzberg, H., D. Raisinghani, and A. Theoret, "The Structure of 'Unstructured' Decision Processes,"

Administrative Science Quarterly, Vol. 21, June 1976, pp. 246-275.

Power, D., "How can DSS impact steps in a general decision process model?" DSS News
Vol. 9, No. 10, May 18, 2008.

Power, D., "How do decision-making models relate to the design and use
of DSS? DSS News, Vol. 5, No. 18, August 29, 2004.

Power, D. J., Decision Support Systems Hyperbook, Cedar Falls, IA: DSSResources.COM, HTML
version,
Fall 2000, URL http://dssresources.com/dssbook/.

Simon, H. A., Administrative Behavior, A study of decision-making
processes in administrative organization (3rd edition). New York: The
Free Press, 1945, 1965, 1976.

Simon, H. A., "Applying Information Technology to Organization
Design", Public Administration Review, Vol. 33, 1973, pp. 268-78.

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