

Chapter 4 Knowledge Matters

1. Explain the significance that efficient and effective knowledge management has for decision making efforts.

- a. Knowledge pervades the knowledge-management process
- b. knowledge is the raw material that is made into finished goods

2. Describe the major flows of knowledge that are involved in manufacturing decisions.

(See figure 4-2)

- a. Accepting messages
- b. Issuing messages
- c. Assimilating knowledge (accepting/rejecting: Altering knowledge store)
- d. Recognizing the need for a decision
- e. Manufacturing a decision
 - knowledge produced from knowledge
 - using a knowledge inventory
 - manipulated by cognitive abilities to produce solutions for a flow of problems
 - knowledge acquisition as needed
 - by-products
 - packaging
- f. Distribution of storehouse and processing abilities
- g. Teaming with a DSS

3. Characterize the nature of knowledge, identify its sources, and discuss its qualities.

“If a system has a representation of something, then the system itself can also be said to have knowledge, namely the knowledge embodied in that representation about that thing” Newell 1982

SOURCES OF KNOWLEDGE

- a. External - Knowledge production due to interaction of system with its environment
- b. Internal - Knowledge production proceeds without interacting with the environment
- c. Mix - intersperse acquisition and derivation in the making of a decision
- d. Make knowledge vs buy knowledge
 - DSS promotes internal production
 - DSS can check reliability of acquired knowledge.

QUALITIES OF KNOWLEDGE

- a. Quality is a significant issue: garbage in garbage out
- b. “Knowledge as an input to a planning process has to meet two requirements: it must be **valid** and **useful**”(Lohuizen 1986)
 - validity is concerned with accuracy, consistency, and certainty
 - utility is concerned with clarity, meaning, relevance and importance

4. Cite several computer-based techniques you might use for knowledge management and explain their relevance to decision support systems.

Text management, forms management, graphics management, solver management, rule management, database management, report management, spreadsheet management, program management, message management

RELEVANCE

- a. Each can be incorporated in DSSs
- b. Each can be studied from standpoints of its convention for representing knowledge and its methods for processing knowledge
- c. Each has been implemented in a variety of tools
- d. Each arose as practical response to various sensed needs and arose independently of other KM techniques
- e. Can be used to compliment each other from a DSS perspective

5. Identify, describe, compare, contrast, and give examples of six types of knowledge that you are likely to manage as a decision maker.

- a. Descriptive knowledge - knowledge about state of some world (past, present, future, hypothetical)
 - also called data or information
 - it is what makes a decision maker informed
- b. Procedural Knowledge - knowledge about how to do something
 - can be acquired or derived
 - is what makes a decision maker skilled
- c. Reasoning knowledge - knowledge about what conclusion is valid in what situation
 - knowing why rather than knowing how
 - is what makes a decision maker expert
- d. Linguistic knowledge- knowledge that enables comprehension of incoming messages
 - can be acquired or derived
 - lexicon, grammar, parser
- e. Presentation Knowledge - knowledge that enables the production of outgoing messages
 - inverse of linguistic knowledge
 - can be acquired or derived
- f. Assimilative knowledge - Knowledge controlling what enters the knowledge store and what its impact is, the structure of the store, and its efficiency
 - basis for learning and filtering
 - controls the validity and utility of a knowledge store

6. Clearly differentiate between knowledge representation and processing, knowledge validity and utility, knowledge acquisition and derivation, a knowledge management technique and a knowledge type.

- a. knowledge representation is how knowledge is viewed by the user (human or computer) as either input for processing or as output. Knowledge processing involves accepting messages, issuing messages, assimilating knowledge, recognizing the need for a decision, manufacturing a decision, and distributing of storehouse and processing abilities.
- b. validity - accuracy, consistency, certainty

utility - clarity, meaning, relevance and importance

c. acquisition - knowledge that is given or programmed in to a system (bought knowledge)

derived - knowledge that is made

d. knowledge management - concerned with representing and processing knowledge

knowledge types - are types of knowledge that are classified based on roles in problem solving that comprise decision making