Lecture 13 of MIS

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**Objectives**
1. Define and describe the major types of knowledge work systems and assess how they provide value for firms.
2. Evaluate the business benefits of using intelligent techniques for knowledge management.

**Chapter Outline**
- 10.3. Knowledge Work Systems
  - Knowledge Workers and Knowledge Work
  - Requirements of Knowledge Work Systems
  - Examples of Knowledge Work Systems
- 10.4. Intelligent Techniques
  - Capturing Knowledge: Expert Systems
  - Organizational Intelligence: Case-Based Reasoning
  - Fuzzy Logic Systems
  - Neural Networks
  - Genetic Algorithms
  - Hybrid AI Systems

**Key Terms**
- Computer-aided design (CAD), Expert systems, Fuzzy logic
- Genetic algorithms, Intelligent techniques, Investment workstations
- Knowledge base, Knowledge discovery, Knowledge engineer
- Knowledge work systems (KWS), Neural networks, Rule base
- Virtual Reality Modeling Language (VRML), Virtual reality systems
- Artificial intelligence (AI), Case-based reasoning (CBR)

**Section 12.3: Knowledge Work Systems.**
Section 12.3 explains the requirements of knowledge work systems. Because of the increasing use of IT to redesign systems and organizations, knowledge management is critical. Nonetheless, knowledge management has its limitations, particularly in the area of artificial intelligence. The sharing of knowledge and the development of knowledge are critical to most organizations, and students must understand this. Also, the roles of the office, office information, and the creation of knowledge.

1. **Knowledge Workers and Knowledge Work:**
   Knowledge workers: Create knowledge and information for organization
   Knowledge workers key roles: Keeping the organization current in knowledge as it develops in the external world—in technology, science, social thought, and the arts

2. **Knowledge workers perform 3 key roles:**
   - Keeping the organization current in knowledge as it develops in the external world
   - Serving as integral consultants regarding the areas of their knowledge, the changes taking place, and opportunities
   - Acting as change agents
(3) Requirements of Knowledge Work Systems

(4) Examples of Knowledge Work Systems
- Computer-aided design (CAD)
- Virtual reality systems
- Virtual Reality Modeling Language (VRML)
- Case: Windows & doors, Virtual campus, house sales, Google sketchup

Section 12.4: Intelligent Techniques.

Section 12.4 explains artificial intelligence, expert systems, case-based reasoning, fuzzy logic systems, neural networks, genetic algorithms, and intelligent agents.

(1) Intelligent Techniques
In the early 1980s, expert systems were believed to represent the future of artificial intelligence and of computers in general. To date, however, they have not lived up to expectations. Many expert systems help human experts in such fields as medicine and engineering, but they are often very expensive to produce and are helpful only in special situations.

Types of Intelligent Techniques:
- Artificial intelligence and database technology provide a number of intelligent techniques that organizations can use to capture individual and collective knowledge and to extend their knowledge base.
- Expert systems, case-based reasoning, and fuzzy logic are used for capturing tacit knowledge.
- Neural networks and data-mining are used for knowledge discovery.
- Genetic algorithms are used for generating solutions to problems that are too large and complex for human beings to analyze on their own.
- Intelligent agents can automate routine tasks to help firms search for and filter information for use in electronic commerce, supply chain management, and other activities.

(2) Expert System: knowledge intensive computer program that captures the expertise of a human in limited domains of knowledge.
- Knowledge Base: Model of human knowledge
- Rule-based Expert System: Collection in an AI system represented in the form of IF-THEN
- Inference Engine: strategy used to search through the rule base
- Forward Chaining: strategy for searching the rules base that begins with the information entered by user and searches the rule base to arrive at a conclusion
- Backward Chaining: strategy for searching the rules base that begins with the information entered by user and searches the rule base to arrive at a conclusion
system that acts as a problem solver

- Examples of Successful Expert Systems: *Galeria Kaufhof, Countrywide Funding Corp*

(3) Case-Based Reasoning: 案例推理, Artificial intelligence technology that represents knowledge as a database of cases and solutions

(4) Fuzzy Logic Systems: 模糊逻辑, Tolerates imprecision: Uses nonspecific terms called membership functions to solve problems

(5) Neural Networks: 神经网络, Hardware or software that attempts to emulate the processing patterns of biological brain. Put intelligence into hardware in form of a generalized capability to learn

(6) Genetic Algorithms: 遗传算法, Problem-solving methods, Promote evolution of solutions to specified problems, Use a model of living organisms adapting to their environment

(7) Intelligent Agents

| 重点 | 知识工作系统的实际应用，人工智能技术 |
| 难点 | 人工智能技术 |
| 案例分析 | Case Study: Can Knowledge Systems Help Procter & Gamble Stay Ahead of the Pack? (in Text) |
| 习题 | Exercise - chapter 11 |