

NPTEL ONLINE CERTIFICATION COURSES

# Management Information Systems

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Week 10: Module 1  
Knowledge Management Systems (KMS)



## CONCEPTS COVERED

- Basic Concepts of Knowledge Management Systems
- Knowledge Management Value Chain
- Types of Knowledge Management Systems

# Knowledge Management Systems

- ❖ Knowledge management refers to the set of business processes developed in an organization to create, store, transfer, and apply knowledge
- ❖ Knowledge management increases the ability of an organization to learn from its environment and to incorporate knowledge into its business processes

# Knowledge Management Systems

## ❖ Important Dimensions of Knowledge

- Data: Flow of captured events or transactions
- Information: Data organized into categories of understanding
- Knowledge: Concepts, experience, and insight that provide a framework for creating, evaluating, and using information. Can be tacit (undocumented) or explicit (documented)

# Knowledge Management Systems

## ❖ Important Dimensions of Knowledge

❖ Wisdom: The collective and individual experience of applying knowledge to the solution of problem; knowing when, where, and how to apply that knowledge

❖ Knowledge is a firm asset:

- Intangible asset
- Requires organizational resources
- Value increases as more people share it

# Knowledge Management Systems

## ❖ Important Dimensions of Knowledge

□ Knowledge has different forms:

- Tacit or explicit
- Know-how, craft, and skill
- Knowing how to follow procedures; why things happen

# Knowledge Management Systems

## ❖ Important Dimensions of Knowledge

□ Knowledge has a location:

- Cognitive event
- Social and individual bases of knowledge
- Sticky, situated, contextual

# Knowledge Management Systems

## ❖ Important Dimensions of Knowledge

□ Knowledge is situational:

- Conditional
- Contextual

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# Knowledge Management Systems

## ❖ Organizational Learning and Knowledge Management:

- Organizational learning: Adjusting business processes and patterns of decision making to reflect knowledge gained through information and experience gathered

# Knowledge Management Systems

## ❖ Knowledge Management Value Chain

- Knowledge acquisition
- Knowledge storage
- Knowledge dissemination
- Knowledge application
- Building organizational and management capital: collaboration, communities of practice, and office environments

# Knowledge Management Systems

## ❖ Knowledge Acquisition:

➤ Organizations acquire knowledge in various ways:

- Corporate repositories of documents, reports, presentations and best practices
- Unstructured documents like e-mails
- Online expert networks
- Knowledge discovery through identification of patterns in corporate data
- Knowledge workstations for discovering new knowledge

# Knowledge Management Systems

## ❖ Knowledge Storage:

- Documents, patterns, and expert rules must be stored through various means so they can be retrieved and used by employees:
  - Creation of a database
  - Document management systems (for digitizing, indexing & tagging)
  - Expert systems



# Knowledge Management Systems

- ❖ Knowledge Dissemination:
- ❖ Various means through which organization knowledge is disseminated are:
  - Portals, e-mail, instant messaging, wikis, social business tools
  - Collaboration tools for sharing calendars, documents, data, and graphics
  - Search engines technology

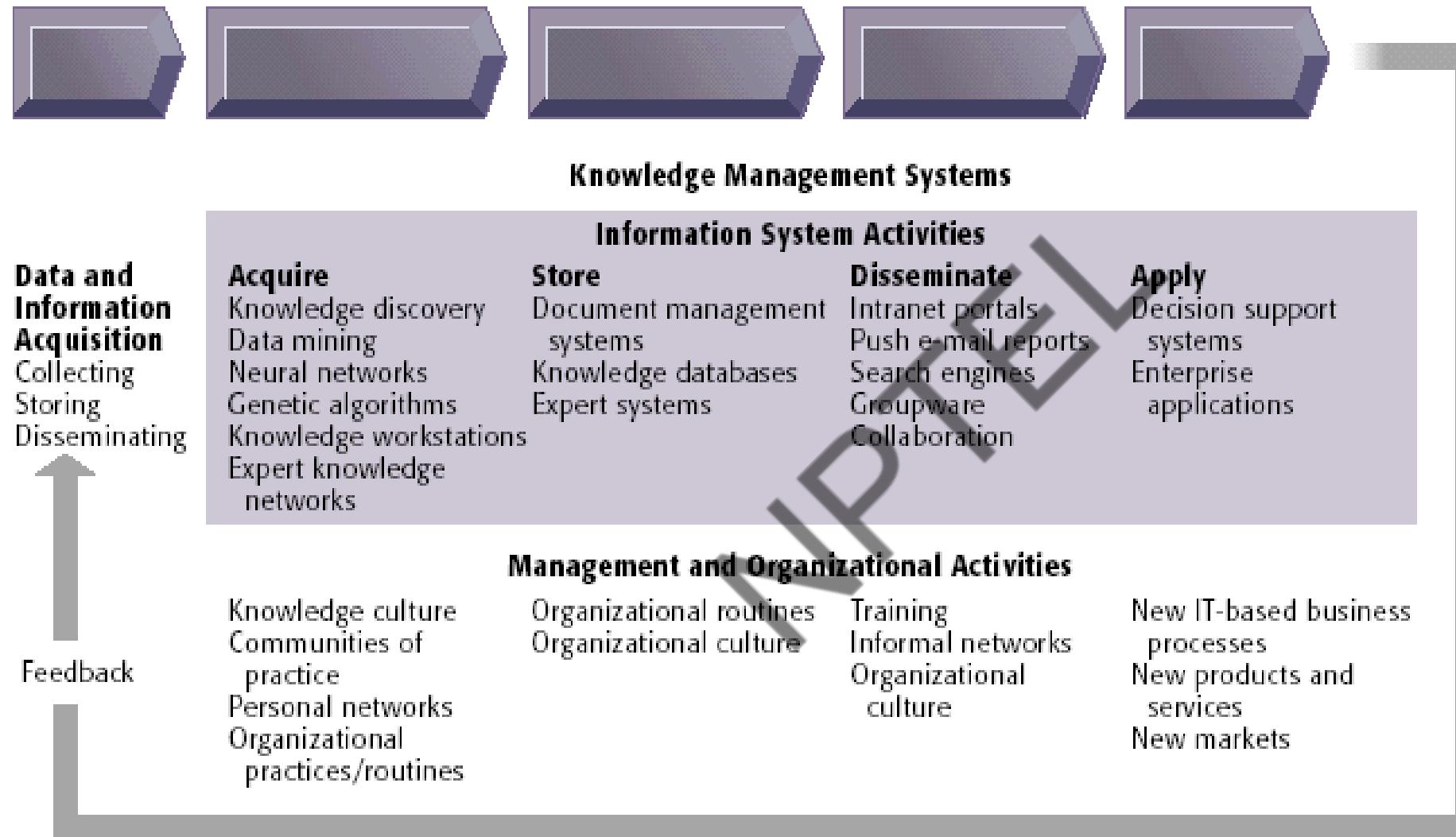
# Knowledge Management Systems

- ❖ Knowledge Application:
- ❖ In order to add business value and justify ROI, organizational knowledge must become a part of management decision making and incorporated into
  - Decision support systems
  - Enterprise applications for managing key internal business processes and relationships with customers and suppliers

# Knowledge Management Systems

- ❖ Building Organizational and Management Capital:
  - Collaboration, and Office Environment
  - New roles and responsibilities:
    - Chief Knowledge Officer
    - Knowledge Managers
    - Communities of Practices (informal social networks of professionals and employees within and outside the firm who have similar work-related activities and interests)

## Knowledge Business Value Chain



# Knowledge Management Systems

- ❖ Types of Knowledge Management Systems:
  - Enterprise-wide knowledge management systems
  - Knowledge work systems
  - Intelligent techniques

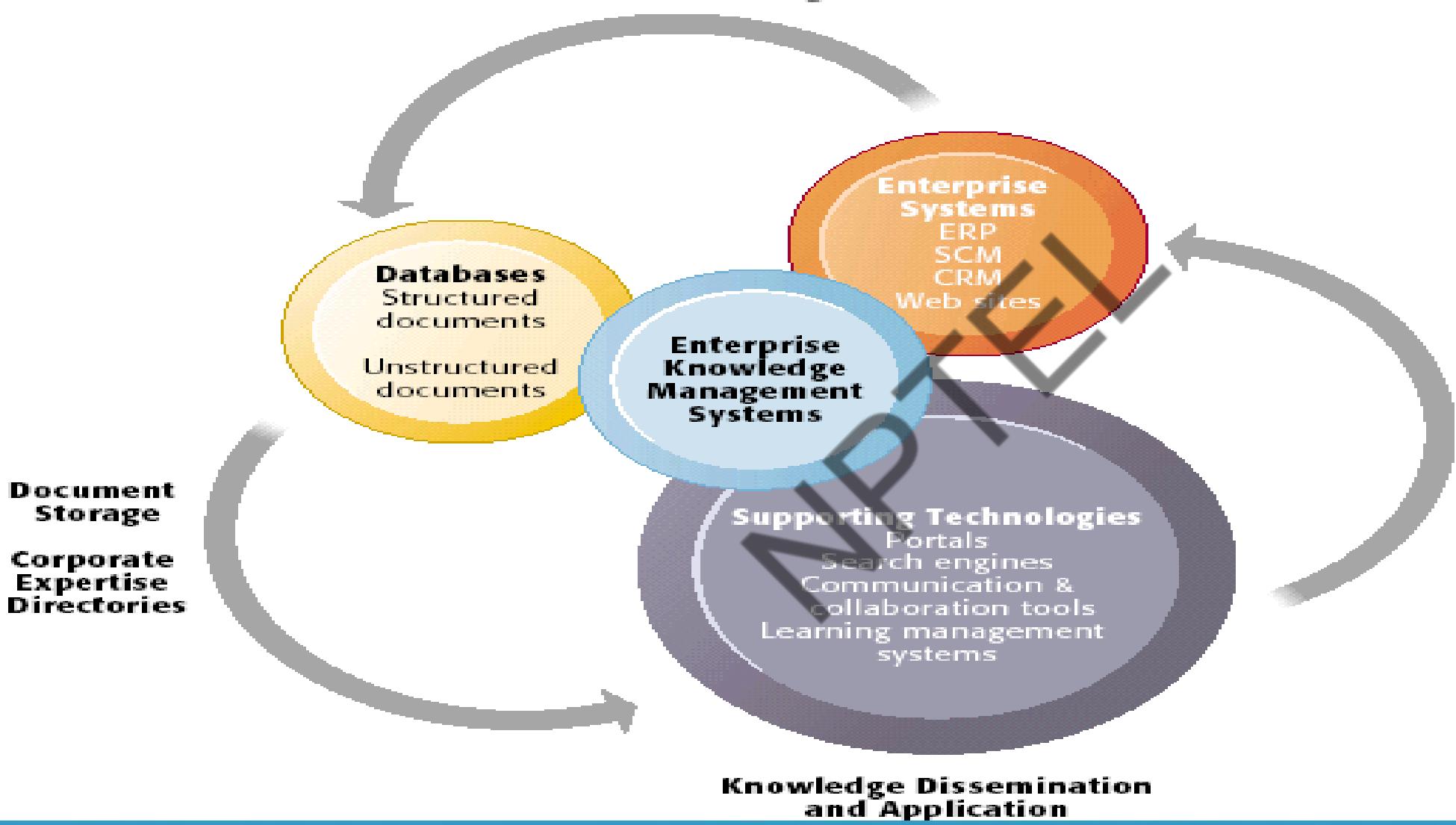
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# Knowledge Management Systems

- ❖ Enterprise-wide knowledge management systems
- General-purpose firm wide efforts to collect, store, distribute, and apply digital content and knowledge
- These systems include capabilities for
  - Searching for information,
  - Storing both structured and unstructured data, and
  - Locating employee expertise within the firm
  - Supporting technologies (e.g., portals, search engines, collaboration and social business tools, and learning management systems)

## Enterprise-Wide Knowledge Management Systems Overview

Data and information generation



# Knowledge Management Systems

- ❖ Knowledge work systems:

- Specialized systems built for engineers, scientists, and other knowledge workers charged with discovering and creating new knowledge for a company

# Knowledge Management Systems

## ❖ Examples of knowledge work systems:

- CAD: Information system that automates the creation and revision of industrial and manufacturing designs using sophisticated graphics software
- Virtual Reality Systems: Interactive graphics software and hardware that create computer-generated simulations that emulate real-world activities or photorealistic simulations
- Investment Workstations: Powerful desktop computer for financial specialists, which is optimized to access and manipulate massive amounts of financial data

# Knowledge Management Systems

## ❖ Intelligent Techniques:

- Data Mining (focus on discovering knowledge)
- Expert Systems (distilling knowledge in the form of rules for a computer program)
- Neural Networks(focus on discovering knowledge)
- Fuzzy Logic
- Genetic Algorithms (for optimal/effective solutions)
- Intelligent Agents

# Knowledge Management Systems

## ❖ Intelligent Techniques:

### ➤ Expert system:

- An intelligent technique for capturing tacit knowledge in a very specific and limited domain of human expertise

### ➤ Fuzzy logic:

- Rule-based technology that can represent imprecise values or ranges of values by creating rules that use approximate or subjective values
- Used for problems that are difficult to represent by IF-THEN rules

# Knowledge Management Systems

❖ Intelligent Techniques:

➤ Neural Networks:

- Hardware or software that emulates the processing patterns of the biological brain to discover patterns and relationships in massive amounts of data
- Use large numbers of sensing and processing nodes that interact with each other

# Knowledge Management Systems

## ❖ Intelligent Techniques:

### ➤ Neural Networks:

- Uses rules it ‘learns’ from patterns in data to construct a hidden layer of logic that can be applied to model new data
- Applications are found in medicine, science, and business

# Knowledge Management Systems

## ❖ Intelligent Techniques:

### ➤ Genetic Algorithms:

- Adaptive computation that examines very large number of solutions for a problem to find optimal solution
- Programmed to “evolve” by changing and reorganizing component parts using processes such as reproduction, mutation, and natural selection: worst solutions are discarded and better ones survive to produce even better solutions

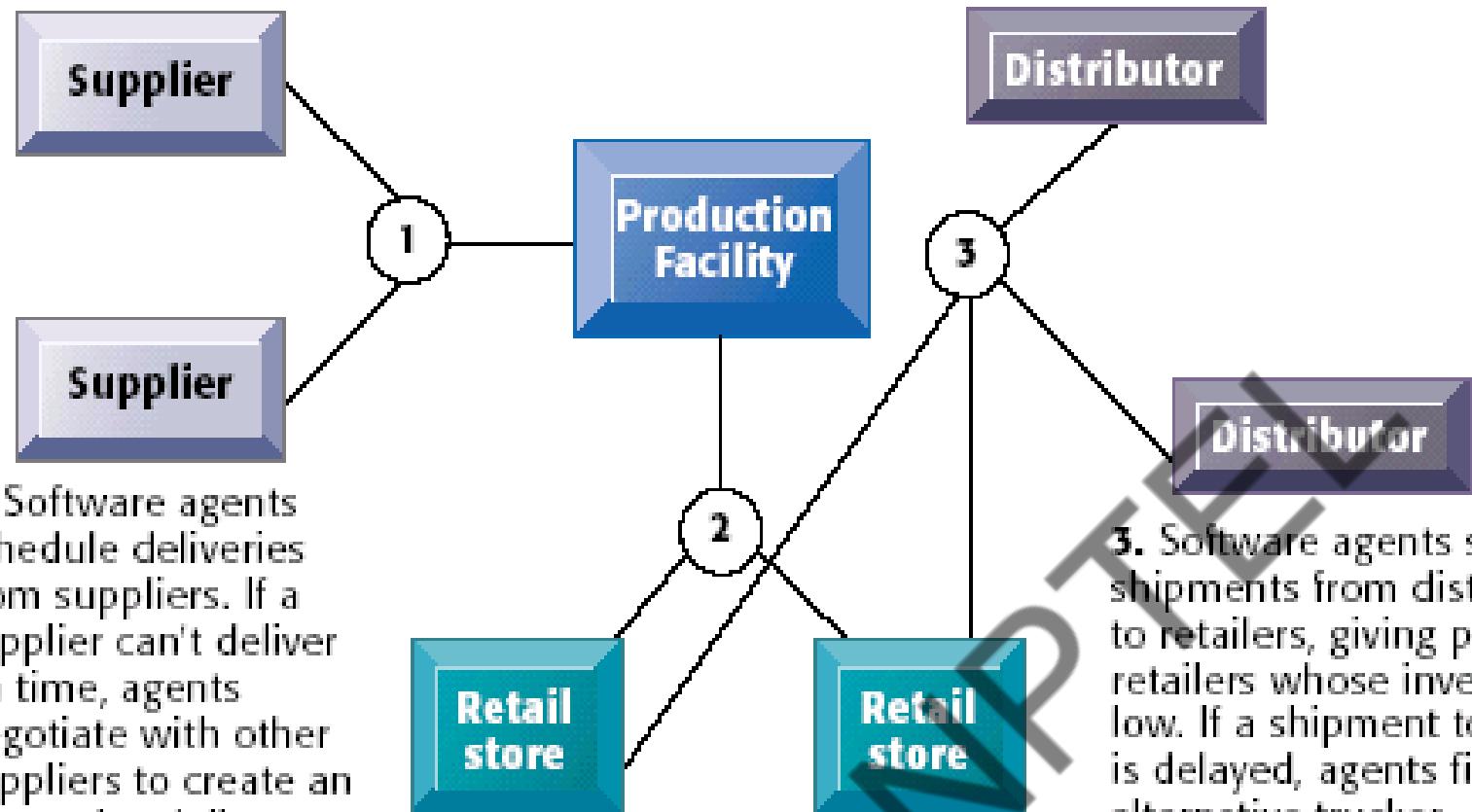
# Knowledge Management Systems

## ❖ Intelligent Techniques:

### ➤ Intelligent Agents:

- Software programs that work in the background without direct human intervention to carry out specific, repetitive, and predictable tasks for an individual user, business process, or software application





**1.** Software agents schedule deliveries from suppliers. If a supplier can't deliver on time, agents negotiate with other suppliers to create an alternative delivery schedule.

**2.** Software agents collect real-time sales data on each P&G product from multiple retail stores. They relay the data to P&G production for replenishing orders and to sales and marketing for trend analysis.

**3.** Software agents schedule shipments from distributors to retailers, giving priority to retailers whose inventories are low. If a shipment to a retailer is delayed, agents find an alternative trucker.

# Knowledge Management Systems

## ❖ Management Challenges:

- Insufficient resources are available to structure and update the content in repositories.
- Poor quality and high variability of content quality results from insufficient validating mechanisms.
- Content in repositories lacks context, making documents difficult to understand.

# Knowledge Management Systems

## ❖ Management Challenges:

- Individual employees are not rewarded for contributing content, and many fear sharing knowledge with others on the job.
- Search engines return too much information, reflecting lack of knowledge structure or taxonomy.

# Knowledge Management Systems

## ❖ Steps in Development of Successful Knowledge Management Projects:

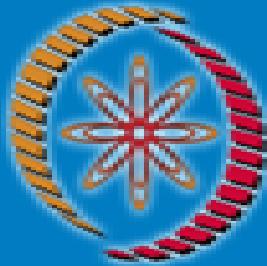
- Develop in stages
- Choose a high-value business process
- Choose the right audience
- Measure ROI during initial implementation
- Use the preliminary ROI to project enterprise-wide values

## REFERENCES

- Laudon, K. C., and Laudon, J. P. (2016), Management Information Systems: Managing the Digital Firm
- Turban, E., Volonio, L., Wood, R. Gregory.(2016), Information Technology for Management
- Rainer, K., Prince, B., Watson, H.,(2015), Management Information Systems
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- Bagchi, Nirmalya., (2010), Management Information Systems



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## NPTEL ONLINE CERTIFICATION COURSES

**Decision Support Systems**

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**Week 10: Module 2**  
**Decision Support Systems**

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## CONCEPTS COVERED

- Introduction to Decision Support Systems (DSS)

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# Introduction to Decision Support Systems (DSS)

- ❖ Man-Computer interactive system
- ❖ Aid management in making decisions
- ❖ Combines Computer's ability to process databases and models with manager's ability to draw on his experience and exercise his judgement

# Introduction to Decision Support Systems

- ❖ Scope
- Role played by DSS in solving managerial decision problems
- Basic components of a DSS
- Basic steps involved in design of a DSS

# Introduction to Decision Support Systems

- ❖ Types of Managerial Decision Problems
  - Structured
  - Unstructured
  - Semi-structured
- ❖ The category into which a decision problem falls depends on how well its objectives can be defined and whether there are well-established procedures for solving it

# Introduction to Decision Support Systems

- ❖ **Types of Managerial Decision Problems**
- **Problems with well defined objectives and well established solution procedures are said to be Structured (e.g., Inventory Replenishment)**
- **Problems with vague objectives and with no well established solution techniques are Unstructured (e.g., New products to be manufactured)**
- **Semi-Structured problems combine the features of both**

# Introduction to Decision Support Systems

- ❖ **Types of Managerial Decision Problems**
- The structured problems can be completely delegated to the computer whereas the unstructured problems have to be solved by the manager alone
- The semi-structured problem which lie between the structured and unstructured problems can be solved neither wholly by a computer nor wholly by a manager;
- They require a man-computer team for their solution
- It is, therefore, in handling the semi-structured problems that the decision support systems can be effective

# Introduction to Decision Support Systems

- ❖ **Different Phases of a Decision-Making Process**
- **Intelligence:** Here the decision maker scans his environment, processes raw data and identifies the problem areas
- **Design:** For the problems identified in the above phase, various alternatives are formulated and analysed in this phase
- **Choice:** Here, a selection is made from the alternatives proposed in the above phase, and the chosen alternative is implemented

# Introduction to Decision Support Systems

## ❖ Problem Solving Process in a DSS:

- Iterative and interactive
- The computer provides some output to the manager, the manager then interprets the output, gives new input, modifies the existing data or asks new questions
- The computer's major tools are models, both simple and sophisticated, whereas the manager uses mostly his experience and judgment

# Introduction to Decision Support Systems

## ❖ Problem Solving Process in a DSS:

- The models used by the computer consist of relationships between the major elements of the system being studied.
- Such relationships usually involve a certain degree of abstraction
- The output of the models will be an approximation of the behaviour of the real system
- The models will be valid only if certain assumptions about the real system are satisfied

# Introduction to Decision Support Systems

- ❖ MIS vs DSS
- DSS designer views effectiveness as more important than efficiency
  - Effectiveness involves identifying what should be done and ensuring that the chosen criterion is a relevant one
  - Efficiency involves minimization of time, cost or effort in performing a specified activity
- In DSS, the computer is used not to replace the decision maker but to enhance his/her decision making abilities

# Introduction to Decision Support Systems

- ❖ MIS vs DSS
- In DSS, the manager plays a very active role, using his/her experience and judgment wherever necessary, and controls as well as directs the computer in its tasks

# Introduction to Decision Support Systems

- ❖ Range of Capabilities of a DSS
- Not all DSS need to include models in order to be effective
- A DSS can provide simple data retrieval facilities and yet be useful in aiding decision making .

# Introduction to Decision Support Systems

## ❖ Range of Capabilities of a DSS

➤ The range of facilities offered by DSS can be listed as:

- Retrieving information
- Providing mechanism for adhoc data analysis
- Providing pre-specified aggregation of data in the form of reports
- Estimating the consequences of proposed decisions
- Proposing decisions

# Introduction to Decision Support Systems

- ❖ Need for DSS Approach
- Problem is semi-structured
  - All the parameters of the problem are not clearly defined
  - The parameters are firmed up as one proceeds through the solution process
- Inputs are dynamic in nature
  - The input data for the problem are not fixed
  - These data change from time to time
  - For example, incorporation of new customer or change in demand from customer

# Introduction to Decision Support Systems

- ❖ Range of Capabilities of a DSS
- DSS rely more heavily on modelling than MIS
- Use mathematical or analytical models to perform ‘what-if’ or other kinds of analysis
- ‘What-if’ analysis, works forward from known or assumed conditions
- It allows the manager to vary certain values or test results to predict outcomes if changes occur in those input values

# Introduction to Decision Support Systems

## ❖ Range of Capabilities of a DSS

- What happens if we raise product prices by 10 percent or increase the advertising budget by Rs. 10 lakhs?
- *Sensitivity analysis* models ask *what-if* questions repeatedly to predict a range of outcomes when one or more input variables are changed multiple times

# Introduction to Decision Support Systems

## ❖ Range of Capabilities of a DSS

- *Backward Sensitivity analysis* helps decision makers with goal seeking.
- For example, if the user wants to sell one million product units next year, how much must he or she should reduce the price of the product?

# Introduction to Decision Support Systems

## ❖ Range of Capabilities of a DSS

- *Multidimensional data analysis and OLAP* are some of the key business intelligence techniques that are deployed in DSS
- *Spreadsheets* have similar feature for *multidimensional analysis* called '*pivot table*'
- Managers use *pivot table* to identify and understand patterns in business information that may be useful for semi structured decision making

# Introduction to Decision Support Systems

## ❖ Range of Capabilities of a DSS

- In the past, much of this modelling was done with spreadsheets and small stand-alone databases.
- Today these capabilities are incorporated into large enterprise BI systems where they are able to analyse data from large corporate databases

# Introduction to Decision Support Systems

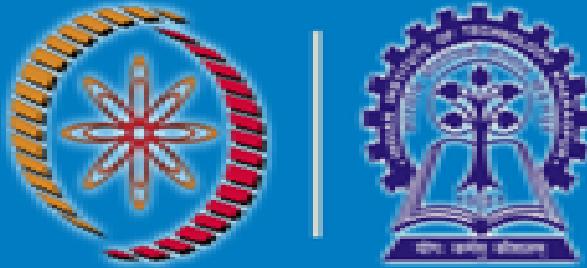
- ❖ There are several other problems for which decision support systems have been reported to have been successfully employed
- Some of these problems are
  - ✓ Decisions on merger of companies
  - ✓ Budget planning
  - ✓ Portfolio management in banks
  - ✓ Corporate planning and
  - ✓ Capacity planning in production

## REFERENCES

- Laudon, K. C., and Laudon, J. P. (2016), Management Information Systems: Managing the Digital Firm
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NPTEL ONLINE CERTIFICATION COURSES

# Management Information Systems

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Week 10: Module 3  
Executive Support Systems



## CONCEPTS COVERED

- Introduction to Executive Support Systems (ESS)

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# Introduction to Executive Support Systems (ESS)

- ❖ ESS is also referred to as Executive Information Systems (EIS)
- ❖ Senior managers need systems that focus on strategic issues and long-term trends, both in the firm and in the external environment
- ❖ They are concerned with questions such as:
  - What will be the employment levels in five years?
  - What are the long-term industry cost trends?
  - What products should the firm make in the next five years?

# Introduction to Executive Support Systems (ESS)

- ❖ Combines many features of MIS and DSS
- ❖ Provide top executives with immediate and easy access to information
- ❖ Identify factors that are critical to accomplishing strategic objectives (critical success factors)
- ❖ So popular that it has been expanded not only to managers, but also to analysts, and other knowledge workers

# Introduction to Executive Support Systems (ESS)

- ❖ Information is presented in forms tailored to the preferences of the executives using the system
- ❖ Customizable graphical user interfaces
- ❖ Exception reports
- ❖ Trend analysis
- ❖ Drill down capability

# Introduction to Executive Support Systems (ESS)

- ❖ Executive Support Systems (ESS) based on Business Intelligence (BI) address such decision making needs of senior management
- ❖ They address non-routine decisions requiring judgment, evaluation, and insight because there is no agreed-on procedure for arriving at a solution
- ❖ These systems are intended to be used by the senior managers directly to provide support to **non-programmed** decisions in strategic environment

# Introduction to Executive Support Systems (ESS)

- ❖ **Programmed and Non-programmed Decisions**
- There are two types of decisions – programmed and non-programmed decisions
- Programmed decisions are basically automated processes, general routine work, where
  - These decisions have been taken several times
  - These decisions follow some guidelines or rules
- ✓ For example, selecting a reorder level for inventories, is a programmed decision

# Introduction to Executive Support Systems (ESS)

## ❖ Non-programmed Decisions:

- Occur in unusual situations
- Decisions are new
- There will not be any rules to follow
- These decisions are made based on the available information
- These decisions are based on the manager's discretion, instinct, perception and judgment
- ✓ Investing in new technology is an example of a non-programmed decision

# Introduction to Executive Support Systems (ESS)

- ❖ Executive Support Systems (ESS) present graphs and data from many sources through an interface that is easy for senior managers to use
- ❖ Often the information is delivered to senior executives through a portal, which uses a Web interface to present integrated personalized business content

# Introduction to Executive Support Systems (ESS)

- ❖ Executive Support Systems (ESS) are designed to incorporate data about external events, such as new tax laws or competitors, but they also draw summarized information from internal MIS and DSS
- ❖ ESS are designed to filter, compress, and track critical data, displaying the data of greatest importance to senior managers
- ❖ Increasingly, such systems include business intelligence analytics for analysing trends, forecasting, and ‘drilling down’ to data at greater levels of detail

# Introduction to Executive Support Systems (ESS)

- ❖ For example, the CEOs of many multi-national companies in various sectors has Executive Support Systems that provide on their desktop a minute-to-minute view of:
  - their organization's financial performance as measured by
  - ✓ working capital,
  - ✓ accounts receivable,
  - ✓ accounts payable,
  - ✓ cash flow and
  - ✓ inventory

# Introduction to Executive Support Systems (ESS)

- ❖ The information is presented in the form of digital dashboard, which displays on a single screen graphs and charts of key performance indicators for managing a company
- ❖ Digital dashboards are becoming an increasingly popular tool for management decision makers

# Introduction to Executive Support Systems (ESS)

- ❖ Contemporary business intelligence and analytics technology have promoted data-driven management, where decision makers rely heavily on analytical tools and data at their fingertips to guide their work
- ❖ Data captured at the factory or sales floor level are immediately available for high-level or detailed views in executive dashboards and reports
- ❖ It is real-time management

# Introduction to Executive Support Systems (ESS)

- ❖ Information base for ESS is often external, unstructured, and even uncertain.
- Exact scope and context of such information is often not known beforehand
- The required information is intelligence based-
  - Market intelligence
  - Investment intelligence
  - Technology intelligence

# Introduction to Executive Support Systems (ESS)

## ❑ Examples of Intelligent Information

❖ Following are some examples of intelligent information, which is often the source of an ESS –

- External databases
- Technology reports like patent records and so on
- Technical reports from consultants
- Market reports

# Introduction to Executive Support Systems (ESS)

## ❑ Examples of Intelligent Information

❖ Following are some examples of intelligent information, which is often the source of an ESS –

- Confidential information about competitors
- Speculative information like market conditions
- Government policies
- Financial reports and information

# Introduction to Executive Support Systems (ESS)

- ❑ Features of Executive Information System
  - Drill Down Capabilities
  - Designed With Management CSFs in Mind
  - Personalized Analysis
  - Navigation of Information
  - Graphical and Textual Information
  - Status Access, Trend Analysis, and Exception Reporting

# Introduction to Executive Support Systems (ESS)

## ❑ Advantages of ESS

- Easy for upper level executive to use
- Ability to analyse trends
- Augmentation of managers' leadership capabilities
- Enhance personal thinking and decision-making
- Contribution to strategic control flexibility
- Enhance organizational competitiveness in the market place

# Introduction to Executive Support Systems (ESS)

## ❑ Advantages of ESS

- Instruments of change
- Increased executive time horizons
- Better reporting system
- Improved mental model of business executive
- Help improve consensus building and communication

# Introduction to Executive Support Systems (ESS)

## ❑ Advantages of ESS

- Improve office automation
- Reduce time for finding information
- Early identification of company performance
- Detail examination of critical success factor
- Better understanding
- Time management

# Introduction to Executive Support Systems (ESS)

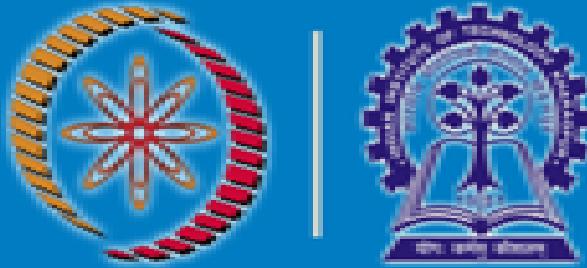
- Limitations of ESS
  - Functions are limited
  - Hard to quantify benefits
  - Executive may encounter information overload
  - System may become slow
  - Difficult to keep current data
  - May lead to less reliable and insecure data
  - Executive cost for small company

## REFERENCES

- Laudon, K. C., and Laudon, J. P. (2016), Management Information Systems: Managing the Digital Firm
- Turban, E., Volonio, L., Wood, R. Gregory.(2016), Information Technology for Management
- Rainer, K., Prince, B., Watson, H.,(2015), Management Information Systems
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NPTEL ONLINE CERTIFICATION COURSES

# Management Information Systems

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Week 10: Module 4  
Expert Systems



## CONCEPTS COVERED

- Introduction to Expert Systems

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# Introduction to Expert Systems

- ❖ Expert System is a computer system that emulates the decision-making ability of an expert
- ❖ Based on Artificial Intelligence, these systems rely on intelligent techniques for capturing tacit knowledge in a very specific and limited domain of human expertise
- ❖ These systems capture the knowledge of skilled employees in the form of a set of rules in a software system that can be used by others in the organization

# Introduction to Expert Systems

- ❖ A knowledge-based information system
- ❖ Contain knowledge about a specific, complex application area
- ❖ Acts as an expert consultant to end users

# Introduction to Expert Systems

## ❖ Components of an Expert System

### ➤ Knowledge Base

- Facts about a specific subject area
- Heuristics that express the reasoning
- procedures of an expert (rules of thumb)

# Introduction to Expert Systems

## ❖ Components of an Expert System

### ➤ Software Resources

- An **inference engine** processes the knowledge and recommends a course of action
- **User interface programs** communicate with the end user
- **Explanation programs** explain the reasoning process to the end user

# Introduction to Expert Systems

## ❖ Knowledge Representation Methods

### ➤ Case-Based

- Knowledge organized in the form of cases
- Cases are examples of past performance, occurrences, and experiences

### ➤ Frame-Based

- Knowledge organized in a hierarchy or network of frames
- A frame is a collection of knowledge about an entity, consisting of a complex package of data values describing its attributes

# Introduction to Expert Systems

## ❖ Knowledge Representation Methods

### ➤ Object-Based

- Knowledge represented as a network of objects
- An object is a data element that includes both data and the methods or processes that act on those data

### ➤ Rule-Based

- Knowledge represented in the form of rules and statements of fact
- Rules are statements that typically take the form of a premise and a conclusion (If, Then)

# Introduction to Expert Systems

- ❖ They perform very limited tasks
- ❖ For example, diagnosing a malfunctioning machine or determining whether to grant credit for a loan
- ❖ Problems that cannot be solved by human experts in the same short period of time are far too difficult for an expert system

# Introduction to Expert Systems

- ❖ However, by capturing human expertise in limited areas, expert systems can provide benefits, helping organizations make high-quality decisions with fewer people
- ❖ Today, expert systems are widely used in business in discrete, highly structured decision-making situations

# Introduction to Expert Systems

## ❖ How Expert Systems Work

- Human knowledge must be modelled or represented in a way that a computer can process
- Expert systems model human knowledge as a set of rules that collectively are called the **knowledge base**
- The rules are obtained by
  - carefully interviewing one or several “experts” who have a thorough command of the knowledge base for the system or
  - by documenting business rules found in manuals, books, or reports

# Introduction to Expert Systems

## ❖ How Expert Systems Work

- Expert systems have from 200 to many thousands of these rules, depending on the complexity of the problem
- These rules are much more interconnected and nested than in a traditional software program
- The strategy used to search through the knowledge base is called the **inference engine**
- Two strategies are commonly used **forward chaining** and **backward chaining**

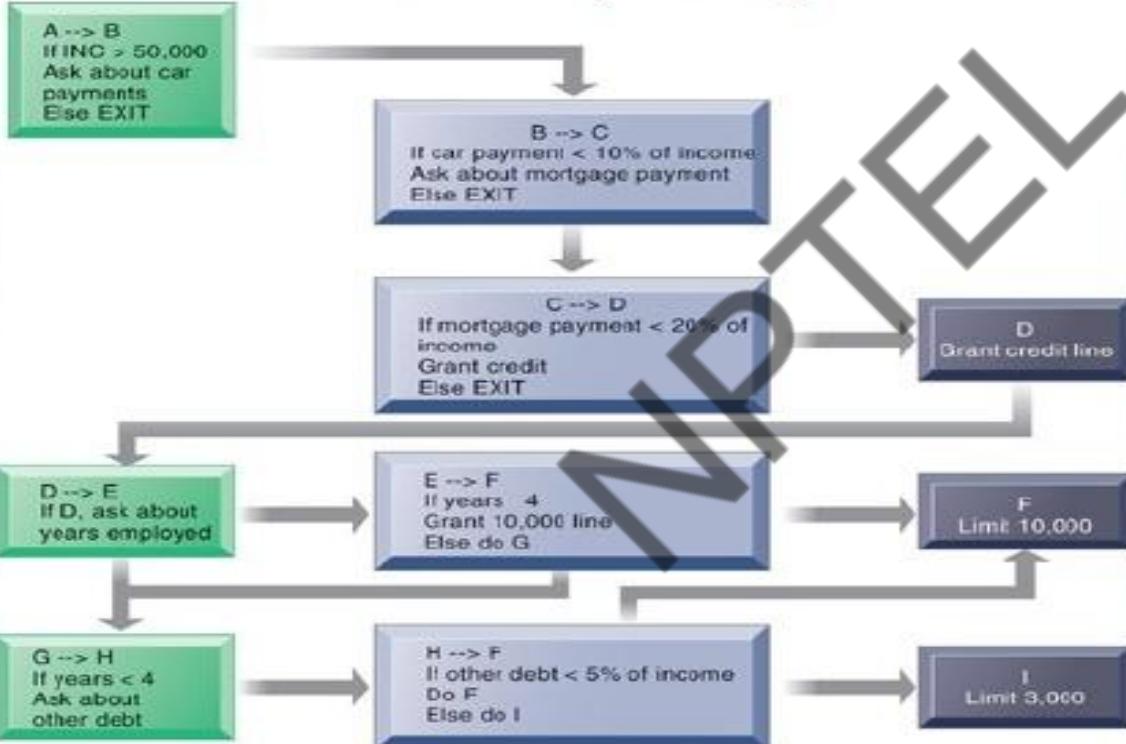
# Introduction to Expert Systems

## ❖ How Expert Systems Work

- In forward chaining, the inference engine begins with the information entered by the user and searches the rule base to arrive at a conclusion
- The strategy is to carry out the action of the rule when a condition is true
- In the figure, beginning on the left, if the user enters a client's name with income greater than \$100,000, the engine will fire all rules in sequence from left to right. (Reference Laudon, page 473)

### Intelligent Techniques

## Rules in an Expert System



**Figure 11-9**

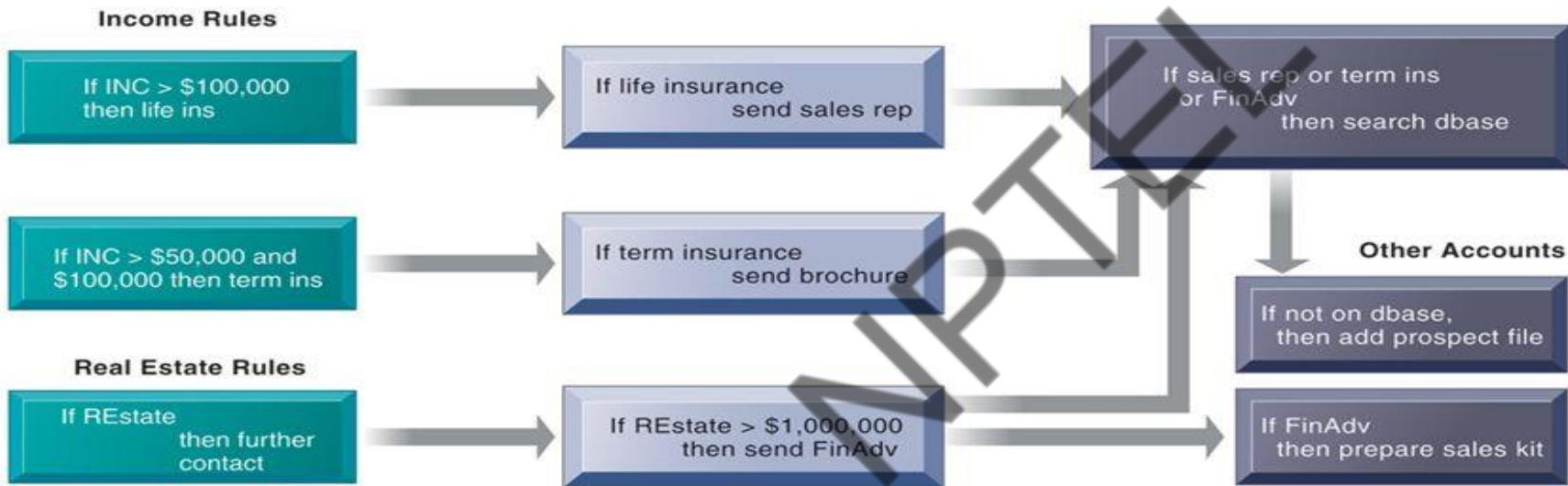
An expert system contains a number of rules to be followed. The rules are interconnected; the number of outcomes is known in advance and is limited; there are multiple paths to the same outcome; and the system can consider multiple rules at a single time. The rules illustrated are for simple credit-granting expert systems.

# Introduction to Expert Systems

## ❖ How Expert Systems Work

- If the user then enters information indicating that the same client owns real estate, another pass of the rule base will occur and more rules will fire
- Processing continues until no more rules can be fired

# Inference Engines in Expert Systems



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

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# Introduction to Expert Systems

## ❖ How Expert Systems Work

- In backward chaining, the strategy for searching the rule base starts with a hypothesis and proceeds by asking the user questions about selected facts until the hypothesis is either confirmed or disproved.
- In our example, in figure 11.6, ask the question “Should we add this person to the prospect database?”
- Begin on the right of the diagram and work toward the left
- You can see that the person should be added to the database if a sales representative is sent, term insurance is granted, or a financial adviser visits the client

# Introduction to Expert Systems

- **Benefits of Expert Systems**

- Captures the expertise of an expert or group of experts in a computer-based information system
- Faster and more consistent than an expert
- Can contain knowledge of multiple experts
- Does not get tired or distracted
- Cannot be overworked or stressed
- Helps preserve and reproduce the knowledge of human experts

# Introduction to Expert Systems

## ➤ Business Benefits of Expert systems:

- Reduced errors
- Reduced costs
- Reduced training time, and
- Higher levels of quality and service

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# Introduction to Expert Systems

## ❖ Limitations of Expert Systems

- Although expert systems lack the robust and general intelligence of human beings, they can provide benefits to organizations if their limitations are well understood
- Only certain classes of problems can be solved using expert systems
- Virtually all successful expert systems deal with problems of classification in limited domains of knowledge where there are relatively few alternative outcomes and these possible outcomes are all known in advance

# Introduction to Expert Systems

## ❖ Limitations of Expert Systems

- Expert systems are much less useful for dealing with unstructured problems typically encountered by managers
- Many expert systems require large, lengthy, and expensive development efforts



# Introduction to Expert Systems

## ❖ Limitations of Expert Systems

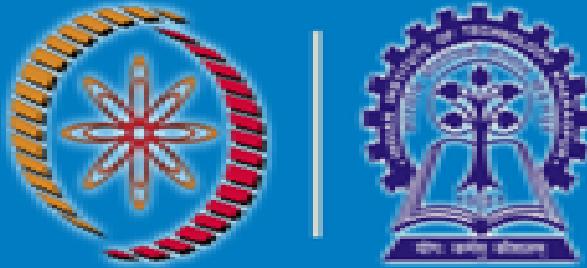
- Hiring and training more experts may be less expensive than building an expert system
- Typically, the environment in which an expert system operates is continually changing so that the expert system must also continually change
- Some expert systems, especially large ones, are so complex that in a few years the maintenance costs equal the development costs.

## REFERENCES

- Laudon, K. C., and Laudon, J. P. (2016), Management Information Systems: Managing the Digital Firm
- Turban, E., Volonio, L., Wood, R. Gregory.(2016), Information Technology for Management
- Rainer, K., Prince, B., Watson, H.,(2015), Management Information Systems
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NPTEL ONLINE CERTIFICATION COURSES

# Management Information Systems

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Week 10: Module 5  
Learning Management Systems (LMS)



## CONCEPTS COVERED

- Introduction to Learning Management Systems (LMS)

NPTEL

# Introduction to Learning Management Systems (LMS)

- Companies need ways to keep track of and manage employee learning and to integrate it more fully into their knowledge management and other corporate systems

# Introduction to Learning Management Systems (LMS)

- ❖ A learning management system (LMS) provides tools for the management, delivery, tracking, and assessment of various types of employee learning and training
- ❖ Contemporary LMS support multiple modes of learning, including CD-ROM, downloadable videos, Web-based classes, live instruction in classes or online, and group learning in online forums and chat sessions

# Introduction to Learning Management Systems (LMS)

- ❖ The LMS consolidates mixed-media training, automates the selection and administration of courses, assembles and delivers learning content, and measures learning effectiveness
- ❖ Businesses run their own learning management systems, but they are also turning to publicly-available massive open online courses (MOOCs) to educate their employees.
- ❖ A MOOC is an online course made available via the Web to very large number of participants

# Introduction to Learning Management Systems (LMS)

- ❖ A learning management system (LMS) is a software application for
  - the administration,
  - documentation,
  - tracking,
  - reporting, and
  - delivery of
    - educational courses,
    - training programs, or learning and development programs.

# Introduction to Learning Management Systems (LMS)

- ❖ The learning management system concept emerged directly from e-Learning.
- ❖ Although the first LMS appeared in the higher education sector, the majority of the LMSs today focus on the corporate market.

# Introduction to Learning Management Systems (LMS)

- ❖ A Learning Management System (or LMS) is a software package that enables the management and delivery of online content to learners.
- ❖ Most LMSs are web-based to facilitate "anytime, anywhere, any pace" access to learning content and administration (Coates, 2005).

# Introduction to Learning Management Systems (LMS)

- ❖ LMS can also be defined as a software application or Web-based technology used to plan, implement, and assess a specific learning process (Dougiamas & Taylor, 2003).

# Introduction to Learning Management Systems (LMS)

- ❖ Learning management systems were designed to identify training and learning gaps, utilizing analytical data and reporting.
- ❖ An LMS delivers and manages all types of content, including video, courses, and documents.

# Introduction to Learning Management Systems (LMS)

- ❖ Through LMS, teachers may
  - ✓ create and integrate course materials,
  - ✓ articulate learning goals,
  - ✓ align content and assessments,
  - ✓ track studying progress, and
  - ✓ create customized test for students.
- LMS allows the communication of learning objectives, and organize learning timelines.

# Introduction to Learning Management Systems (LMS)

- LMS allows the communication of learning objectives, and organize learning timelines.
- LMS delivers learning content and tools straight to learners, and
- It can also reach student groups through special settings.
- Such systems have built in customizable features including assessment and tracking.

# Introduction to Learning Management Systems (LMS)

- Thus, learners can see in real time their progress and instructors can monitor and communicate the effectiveness of learning.
- One of the most important features of LMS is trying to create a streamline communication between learners and instructors.

# Introduction to Learning Management Systems (LMS)

- Such systems, besides
  - facilitating online learning,
  - tracking learning progress,
  - providing digital learning tools,
  - manage communication,
  - selling content,
- may also be used to provide different communication features.

# Introduction to Learning Management Systems (LMS)

❖ There are six major advantages of LMS:

- Interoperability,
- Accessibility,
- Reusability,
- Durability,
- Maintenance ability and
- Adaptability

# Introduction to Learning Management Systems (LMS)

## ❖ Other advantages include:

- Content in various formats: text, video, audio, and so on.
- One can access materials anytime, from everywhere, teachers can modify the content, and students can see the updated material.
- The evaluation of students is easier and fair, based on student attendance and online quizzes.
- Students and teachers can re-use the material every time they need.

# Introduction to Learning Management Systems (LMS)

## ❖ Disadvantages

- Implementing LMS requires a well-built technology infrastructure.
- Teachers have to be willing to adapt their curricula from face to face lectures to online lectures.

# Introduction to Learning Management Systems (LMS)

- ❖ LMS is a software that automates the administration of training events.
- ❖ LMS registers users, tracks courses in a catalogue, and records data from learners
- ❖ It also provides reports to management.

# Introduction to Learning Management Systems (LMS)

- ❖ **Modular Object Oriented Dynamic Learning Environment (MOODLE) is a Learning Management System (LMS)**
  - ❖ It is a free, Open Source Software package designed using sound pedagogical principles
- 
- It helps educators to create effective quality courses and
  - It helps students learn.

# Introduction to Learning Management Systems (LMS)

## ❖MOODLE:

- One advantage of the open source format is that it enables users to download a variety of learning modules that fit their needs.
- Educators can add email, discussion boards, live chats, online quizzes, and a variety of other modules that differentiate their system from commercially available content management systems.

# Introduction to Learning Management Systems (LMS)

## ❖ MOODLE:

- Another advantage of open source systems is that users can add new features and enhancements that are available to all users at no additional cost



# Introduction to Learning Management Systems (LMS)

## ❖MOODLE:

- Information about everything that is added to Moodle is saved in a database.
- This information includes the name of all students and teachers, the individual quiz items, journal entries, activities that students have done, and so on.
- The front end of Moodle, the part that students see, is therefore a database driven web site, as opposed to the traditional static site that is same regardless of who looks at it.

# Introduction to Learning Management Systems (LMS)

## ❖MOODLE:

- This comprehensive data tracking allows teachers to keep abreast of the activities of their students.
- They are able to see what their students have been doing via the “logs”, as well as being able to see in detail how students have done in the various tasks made by the course teachers

# Introduction to Learning Management Systems (LMS)

## ❖ MOODLE:

- As a ‘website’, Moodle is by definition a form of communication
- Teachers can use Moodle to keep in touch with their students by adding text, images and sound



# Introduction to Learning Management Systems (LMS)

## ❖ MOODLE:

- More specifically, there are modules within Moodle like
  - email,
  - chat, etc.
- that are specifically geared to facilitate communication between students and teachers and between students and students.

# Introduction to Learning Management Systems (LMS)

## ❖ MOODLE:

- What is more, Moodle manages all these modes of communication
- For example, forums (bulletin boards) can be set to automatically send out emails to subscribers informing them of new postings.



# Introduction to Learning Management Systems (LMS)

## ❖ MOODLE:

- Moodle is designed to help educators create online courses with opportunities for rich interaction.
- Its open source license and modular design means that many people can develop additional functionality

## REFERENCES

- Laudon, K. C., and Laudon, J. P. (2016), Management Information Systems: Managing the Digital Firm
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