INFORMATION SYSTEMS AND TECHNOLOGY IN THE MANAGEMENT OF ORGANIZATION

METHODICAL GUIDELINES
for studying the course and independent work of students
for training Masters
specialty 073 "Management"

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Preface

Management information systems (MIS) are methods of using technology to help organizations better manage people and make decisions. Managers use management information systems to gather and analyze information about various aspects of the organization, such as personnel, sales, inventory, production or other applicable factors. Management information systems can be used to evaluate the performance of the organization as a whole, certain departments or even individuals. Other management systems, such as supply chain management and project management, are often included under the label of management information systems.

Successful organizations have large and small leverage available technologies to manage business activities and assist in making decisions. They use information systems to collect data and process it according to the needs of the analyst, manager or business owner. Businesses operate more efficiently by using varied information systems to interact with customers and partners, curtail costs and generate revenues.

To gain the maximum benefits from the company's information system, it is necessary to exploit all capacities of IS. Information systems gain their importance by processing the data from company inputs to generate information that is useful for managing of operations. To increase the information system's effectiveness, organization can either add more data to make the information more accurate or use the information in new ways.

The company information system can help managers make better decisions by delivering all the information you need and by modeling the results of their decisions. A decision involves choosing a course of action from several alternatives and carrying out the corresponding tasks. For each possibility, the system can calculate key indicators such as sales, costs and profits to help manager to determine which alternative gives the most beneficial result.

The methodical guidelines include the main themes that are provided by program of discipline, deals with complex issues of Information systems and technologies in management of organizations, focuses on the problematic and controversial issues that are not addressed in the literature. Guidelines include the tasks for independent work, discussion questions, and questions for self-evaluation of students. In the end of methodical guidelines there is a list of references to literature that is recommended for advanced study of course.

1 Theme 1

Foundations of Information Systems in Business

Discussion Topics

1. What is an Information System in Business?

2. System Concepts

3. The components of an Information System in Business

An information system (IS) can be any organized combination of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and disseminates information in an organization. People rely on modern information systems to communicate with one another using a variety of physical devices (hardware) , information processing instructions and procedures (software) , communications channels (networks) , and stored data (data resources). Although today's information systems are typically thought of as having something to do with computers, we have been using information systems since the dawn of civilization.

There are five areas of IS knowledge: foundation Concepts, Information Technologies, Business Applications, Development Processes, Management Challenges.

System concepts underlie all business processes, as well as our understanding of information systems and technologies. That's why we need to discuss how generic system concepts apply to business firms and the components and activities of information systems. Understanding system concepts will help you understand many other concepts in the technology, applications, development, and management of information systems.

A system is defined as a set of interrelated components, with a clearly defined boundary, working together to achieve a common set of objectives by accepting inputs and producing outputs in an organized transformation process.

Systems have three basic functions: Input, Processing and Output. The system concept becomes even more useful by including two additional elements: feedback and control. A system with feedback and control functions is sometimes called a cybernetic system, that is, a self-monitoring, self-regulating system.

All information systems use people, hardware, software, data, and network resources to perform input, processing, output, storage, and control activities that transform data resources into information products. People resources include end users and Information System specialists; hardware resources consist of machines and media, software resources include both programs and procedures; data resources include data and knowledge bases, and network resources include communications media and networks. Data resources are transformed by information processing

activities into a variety of information products for end users. Information processing consists of the system activities of input, processing, output, storage, and control.

End users (also called users or clients) are people who use an information system or the information it produces. They can be customers, salespersons, engineers, clerks, accountants, or managers and are found at all levels of an organization. IS specialists are people who develop and operate information systems. They include systems analysts, software developers, system operators, and other managerial, technical, and clerical IS personnel.

Tasks for independent work

1. How do information technologies contribute to the business success of the companies? Provide an example with explaining how the technology implemented led to improved performance.
2. Use the Internet to research the latest offerings in business intelligence technologies and their uses by companies. Prepare a report to summarize your findings and highlight new and innovative uses of these technologies.
3. Why do some companies adopt and deploy innovative technologies while others in the same line of business do not? Break into small groups with your classmates to discuss what characteristics of companies could influence their decision to innovate with the use of information technologies.

Discussion Questions

1. How can information technology support a company's business processes and decision making and give it a competitive advantage? Give examples to illustrate your answer.
2. How does the use of the Internet, intranets, and extranets by companies today support their business processes and activities?
3. Why do big companies still fail in their use of information technology? What should they be doing differently?
4. How can a manager demonstrate that he or she is a responsible end user of information systems? Give several examples.

Questions for self-evaluation

1. What is an Information System?
2. What are the Information Technologies as an area of IS?
3. What are the Business Applications as an area of IS?
4. What are the fundamental roles of the business applications of information systems?
5. What are the System's basic functions?
6. What is a Feedback?
7. What components an information system includes?

2 Theme 2

Types of Information Systems in a Business Organization

Discussion Topics

1. Trends in Information Systems

2. Classifications of information systems

3. Information System Activities

The business applications of information systems have expanded significantly over the years. Until the 1960s, the role of most information systems was simple: transaction processing, record keeping, accounting, and other electronic data processing (EDP) applications. By the 1970s, it was evident that the prespecified information products produced by such management information systems were not adequately meeting the decision making needs of management, so the concept of decision support systems (DSS) was born. In the 1980s, several new roles for information systems appeared. First, the rapid development of microcomputer processing power, application software packages, and telecommunications networks gave birth to the phenomenon of end-user computing. Second, it became evident that most top corporate executives did not directly use either the reports of management information systems or the analytical modeling capabilities of decision support system. Third, breakthroughs occurred in the development and application of artificial intelligence (AI) techniques to business information systems.

An important new role for information systems appeared in the 1980s and continued through the 1990s: the concept of a strategic role for information systems, sometimes called strategic information systems (SIS). In this concept, information technology becomes an integral component of business processes, products, and services that help a company gain a competitive advantage in the global marketplace.

Electronic Business and Commerce: 1990s–2000s appeared. There are Internet-based e-business and e-commerce systems Web-enabled enterprise and global e-business operations and electronic commerce on the Internet, intranets, extranets, and other networks. Enterprise Resource Planning and Business Intelligence: 2000s–present are the major types of modern information systems. There are Enterprisewide common-interface applications data mining and data visualization, customer relationship management, supply-chain management.

The Internet and related technologies and applications have changed the ways businesses operate and people work, as well as how information systems support business processes, decision making, and competitive advantage. Thus, many businesses today are using Internet technologies to Web-enable their business processes and create innovative e-business applications.

Information systems have always been needed to process data generated by, and used in, business operations. Such operations support systems produce a variety of

information products for internal and external use; however, they do not emphasize the specific information products that can best be used by managers. Further processing by management information systems is usually required. The role of a business firm's operations support systems is to process business transactions, control industrial processes, support enterprise communications and collaborations, and update corporate databases efficiently.

An important information system activity is the control of system performance. An information system should produce feedback about its input, processing, output, and storage activities. This feedback must be monitored and evaluated to determine whether the system is meeting established performance standards. Then appropriate system activities must be adjusted so that proper information products are produced for end users.

Tasks for independent work

1. The New York Times chose to deploy their innovation support group as a shared service across business units. What do you think this means? What are the advantages of choosing this approach? Are there any disadvantages?
2. The newspaper industry has been facing serious challenges to its viability ever since the Internet made news available online. How are the leading newspapers coping with these challenges? What do you think the industry will look like 5 or 10 years from now? Go online to research these issues and prepare a report to share your findings.
3. Go online and search the Internet for other examples of companies using technology to help them innovate and develop new products or services.

Discussion Questions

1. What are some of the toughest management challenges in developing IT solutions to solve business problems and meet new business opportunities?
2. Why are there so many conceptual classifications of information systems? Why are they typically integrated in the information systems found in the real world?
3. In what major ways have information systems in business changed during the last 40 years? What is one major change you think will happen in the next 10 years?
4. Refer to the real world example about responsibility and accountability for project failures in the chapter. Are these IT projects, or business projects with a significant IT component? Who should be responsible for ensuring their success? Explain.

Questions for self-evaluation

1. Which information systems appeared during the period from 1950s to 1960s?
2. In what period did Management information systems appear?

3. What is an Extranet?
4. What is E-commerce?
5. What kinds of information systems involve Specialized information systems?
6. Which activity refers to the Input of Data Resources?
7. Which activity refers to the Processing of Data into Information?

3 Theme 3.

Management Information Systems Hardware and Software

Discussion Topics

1. Management Information Systems Hardware

2. The Computer System Concept

3. Management Information Systems Software

Today's computer systems come in a variety of sizes, shapes, and computing capabilities. Rapid hardware and software developments and changing end-user needs continue to drive the emergence of new models of computers, from the smallest handheld personal digital assistant/cell phone combinations to the largest multiple-CPU mainframes for enterprises.

Microcomputers are the most important category of computer systems for both businesspeople and consumers. Usually called a personal computer , or PC. They have become powerful networked professional workstations for business professionals.

Midrange systems are primarily high-end network servers and other types of servers that can handle the large-scale processing of many business applications. Midrange systems first became popular as minicomputers for scientific research, instrumentation systems, engineering analysis, and industrial process monitoring and control.

Mainframe systems are large, fast, and powerful computer systems. For example, mainframes can process thousands of million instructions per second (MIPS). Mainframes can also have large primary storage capacities. Mainframes are used for computation-intensive applications, such as analyzing seismic data from oil field explorations or simulating flight conditions in designing aircraft. Mainframes are also widely used as superservers for the large client/server networks and high-volume Internet Web sites of large companies.

The term supercomputer describes a category of extremely powerful computer systems specifically designed for scientific, engineering, and business applications requiring extremely high speeds for massive numeric computations.

A computer is a system , an interrelated combination of components that performs the basic system functions of input, processing, output, storage, and control, thus providing end users with a powerful information processing tool. There are Input devices, Processing units, Output devices, Storage devices, Control units.

Software is the general term for various kinds of programs used to operate and manipulate computers and their peripheral devices. One common way of describing hardware and software is to say that software can be thought of as the variable part of a computer and hardware as the invariable part. There are many types and categories of software.

General-purpose application programs are programs that perform common information processing jobs for end users. Function-specific application software packages are available to support specific applications of end users in business and other fields.

System software consists of programs that manage and support a computer system and its information processing activities. We can group system software into two major categories: System Management Programs, System Development Programs.

Tasks for independent work

1. What are the business benefits of implementing strong IT asset management programs? In what ways have the companies benefited? Provide several examples.
2. An important metric in this area is the Total Cost of Ownership (TCO) of their IT assets. Go online and research what TCO is and how it is related to IT asset management. How are companies using TCO to manage their IT investments?
3. In what areas of business would you expect technology to make inroads next? Where do you think it would be most beneficial, and how would it change the way employee work today? Provide several examples.

Discussion Questions

1. What trends are occurring in the development and use of the major types of computer systems?
2. Do you think that information appliances like PDAs will replace personal computers (PCs) in business applications? Explain.
3. Are networks of PCs and servers making mainframe computers obsolete? Explain.
4. What major trends are occurring in software? What capabilities do you expect to see in future software packages?
5. How do the different roles of system software and application software affect you as a business end user? How do you see this changing in the future?

Questions for self-evaluation

1. What is MIS hardware?
2. What does computer input device provide?
3. What component controls a computer system?

4. What kinds of output technologies are used in MIS?
5. What kinds of Storage technologies are used in MIS?
6. What does Software mean?
7. What functions refer to basic functions of an operating system?

4 Theme 4

Telecommunication & Networking in Business

Discussion Topics

1. The Concept of a Network in Business

2. Business Telecommunications

3. Telecommunications Network Alternatives

Telecommunications is the exchange of information in any form (voice, data, text, images, audio and video) over networks. The Internet is the most widely visible form of telecommunications in daily lives. Major trends occurring in the field of telecommunications have a significant impact on management decisions in business.

By definition, the term network means an interconnected or interrelated chain, group, or system. The examples of networks in our world are virtually endless, and computer networks, though both valuable and powerful, are just one example of the concept. A computer network is a collection of computers connected and enabled to exchange information. The term business computer networking speaks to the application of a computer network in a business setting.

The explosive growth of the Internet and the World Wide Web has spawned a host of new telecommunications products, services, and providers. Driving and responding to this growth, business firms have dramatically increased their use of the Internet and the Web for electronic commerce and collaboration.

Open systems with unrestricted connectivity, using Internet networking technologies as their technology platform, are today's primary telecommunications technology drivers.

The changes in telecommunications industries and technologies are causing a significant change in the business use of telecommunications. The trend toward more vendors, services, Internet technologies, and open systems, and the rapid growth of the Internet, the World Wide Web, and corporate intranets and extranets, dramatically increases the number of feasible telecommunications applications.

Use of the Internet, intranets, extranets, and other telecommunications networks can dramatically cut costs, shorten business lead times and response times, support e-commerce, improve the collaboration of workgroups, develop online operational processes, share resources, lock in customers and suppliers, and develop new products and services. These benefits make applications of telecommunications more strategic and vital for businesses that must increasingly find new ways to compete in both domestic and global markets.

Telecommunications is a highly technical, rapidly changing field of information systems technology. Most business professionals do not need a detailed knowledge of its technical characteristics. However, it is necessary understand some of the important characteristics of the basic components of telecommunications networks.

This understanding will help you participate effectively in decision making regarding telecommunications alternatives. Network Alternative are Networks, Media, Processors, Software, Channels, Topology/Architecture. Types of Telecommunications Networks are Wide Area Networks, Metropolitan Area Network, Local Area Networks and Virtual Private Networks.

Tasks for independent work

1. Implementing telepresence seems to have other, less tangible, advantages beyond travel cost savings. What are some of those? How do you quantify them to make the case for investing in the technology? Provide at least two fully developed examples.
2. Technology enhances the ability of educational institutes to reach students across geographic boundaries. One recent development in this area is YouTube EDU. Go online to check out the site and prepare a report summarizing its objectives, the kind of content available there, and how it could be used to support traditional modes of education delivery, such as lectures.
3. If widely adopted, these technologies could conceivably lead to a concentration of specialists in a small number of "hub" institutions. Do you believe this would lead to an increase or decrease in the availability of these professionals? What could be the positive and negative consequences of this development?

Discussion Questions

1. The Internet is the driving force behind developments in telecommunications, networks, and other information technologies. Do you agree or disagree? Why?
2. How is the trend toward open systems, connectivity, and interoperability related to business use of the Internet, intranets, and extranets?
3. How will wireless information appliances and services affect the business use of the Internet and the Web? Explain.
4. What are some of the business benefits and management challenges of client/server networks? Network computing? Peer-to-peer networks?
5. What strategic competitive benefits do you see in a company's use of extranets?
6. Do you think that business use of the Internet, intranets, and extranets has changed what businesspeople expect from information technology in their jobs? Explain.

7. The insatiable demand for everything wireless, video, and Web-enabled everywhere will be the driving force behind developments in telecommunications, networking, and computing technologies for the foreseeable future. Do you agree or disagree? Why?

Questions for self-evaluation

1. What does the term network mean?
2. What do telecommunications mean?
3. What are the trends in telecommunications?
4. What categories of telecommunications-based services are available today?
5. What internet technologies Customers use for Business Telecommunications?
6. What is an Intranet?
7. What technologies Company can use as an Extranets links?
8. What kind of network connects computers and other information processing in office, classroom, building, manufacturing plant?

5 Theme 5

E-Business Systems

Discussion Topics

1. Cross-Functional Enterprise Applications

2. Transaction Processing Systems

3. Enterprise Collaboration Systems

Electronic business, or e-business, is the application of information and communication technologies ICT in support of all the activities of business. E-business is not synonymous with e-commerce. E-business is much broader in scope, going beyond transactions to signify use of the Internet, in combination with other technologies and forms of electronic communication, to enable any type of business activity.

Many companies today are using information technology to develop integrated crossfunctional enterprise systems that cross the boundaries of traditional business functions in order to reengineer and improve vital business processes all across the enterprise. These organizations view cross-functional enterprise systems as a strategic way to use IT to share information resources and improve the efficiency and effectiveness of business processes, and develop strategic relationships with customers, suppliers, and business partners.

Enterprise applications focus on accomplishing fundamental business processes in concert with a company's customer, supplier, partner, and employee stakeholders. The major Enterprise applications: Enterprise resource planning (ERP), Customer

relationship management (CRM), Partner relationship management (PRM), Supply chain management (SCM).

Enterprise Application Integration software enables users to model the business processes involved in the interactions that should occur between business applications. EAI also provides middleware that performs data conversion and coordination, application communication and messaging services, and access to the application interfaces involved. EAI software can integrate the front-office and back-office applications of a business so they work together in a seamless, integrated way. This is a vital capability that provides real business value to a business enterprise that must respond quickly and effectively to business events and customer demands.

Transaction processing systems (TPS) are cross-functional information systems that process data resulting from the occurrence of business transactions. We introduced transaction processing systems in Chapter 1 as one of the major application categories of information systems in business. Transactions are events that occur as part of doing business, such as sales, purchases, deposits, withdrawals, refunds, and payments.

Enterprise collaboration systems (ECS) are cross-functional information systems that enhance communication, coordination, and collaboration among the members of business teams and workgroups. Information technology, especially Internet technologies, provides tools to help us collaborate—to communicate ideas, share resources, and coordinate our cooperative work efforts as members of the many formal and informal process and project teams and workgroups that make up many of today's organizations.

Tasks for independent work

1. Service-oriented architecture (SOA) is a recent approach to systems development and implementation that has much in common (and some differences, as well) with enterprise architecture. Go online and research the similarities and differences. Prepare a report to summarize your work.
2. Have you considered a career as an enterprise architect? What bundle of courses would you put together to design a major or a track in enterprise architecture?
3. What is the value derived from companies with mature enterprise architectures? Can you see any disadvantages?

Discussion Questions

1. What are the advantages of centralized enterprise architecture? What are the advantages of a decentralized approach that leaves these decisions to the operating units? How do you balance both? Discuss.
2. Why is there a trend toward cross-functional integrated enterprise systems in business?
3. What other solutions could there be for the problem of information systems incompatibility in business besides EAI systems?

Questions for self-evaluation

1. What does E-business mean?
2. What process involves the buying, selling, marketing and servicing of products and service?
3. What interconnects front-office and back-office applications in enterprise?
4. What components does Transaction Processing Cycle consist of?
5. What does the Coordination in Enterprise collaboration systems mean?
6. What components do Electronic communication tools include?
7. What category of software does calendaring and scheduling tools include?

6 Theme 6

Functional Business Information Systems

Discussion Topics

1. Functional Systems & Marketing Systems

2. Manufacturing Systems

3. Human Resource Systems

4. Accounting and Finance Systems

There are as many ways to use information technology in business as there are business activities to be performed, business problems to be solved, and business opportunities to be pursued. As a business professional, you should have a basic understanding and appreciation of the major ways information systems are used to support each of the functions of business that must be accomplished in any company that wants to succeed.

Functional business systems are a variety of types of information systems (transaction processing, management information, decision support, and so on) that support the business functions of accounting, finance, marketing, operations management, and human resource management.

A marketing information system (MkIS) is a management information system (MIS) designed to support marketing decision making. It is a system in which marketing data is formally gathered, stored, analysed and distributed to managers in accordance with their informational needs on a regular basis. The online business dictionary defines Marketing Information System (MkIS) as "a system that analyzes and assesses marketing information, gathered continuously from sources inside and outside an organization or a store."

Manufacturing information System is a computer-based system that works in conjunction with other functional information systems to support the firm's management in solving problems that relate to manufacturing the firm's products. The

major types of manufacturing information Systems are: Material requirements planning (MRP), Enterprise resource planning (ERP), Computer-aided manufacturing (CAM) and Manufacturing execution systems (MES).

The human resource management (HRM) function involves the recruitment, placement, evaluation, compensation, and development of the employees of an organization. The goal of human resource management is the effective and efficient use of the human resources of a company. Thus, human resource information systems (HRIS) are designed to support planning to meet the personnel needs of the business, development of employees to their full potential, and control of all personnel policies and programs.

Accounting information systems are the oldest and most widely used information systems in business. Accounting information systems can record and report business transactions and other economic events. Computer-based accounting systems record and report the flow of funds through an organization on a historical basis and produce important financial statements such as balance sheets and income statements. Such systems also produce forecasts of future conditions such as projected financial statements and financial budgets. A firm's financial performance is measured against such forecasts by other analytical accounting reports.

Computer-based financial management systems support business managers and professionals in decisions concerning the financing of a business and the allocation and control of financial resources within a business. Major financial management system categories include cash and investment management, capital budgeting, financial forecasting, and financial planning.

Tasks for independent work

1. Technologies and systems involved in financial reporting have received a great deal of attention in the last few years due to renewed regulatory focus on the integrity and reliability of financial information. Go online and research how companies are deploying technology to deal with these issues. Prepare a report to summarize your findings.
2. A number of political and cultural issues were involved in the implementation of the "one source of the truth" approach. Can these obstacles be overcome simply by mandating compliance from top management? What else should companies do to help ease these transitions?
3. What is the business value derived from the successful completion of the project? What can executives do now that could not before? Provide some examples.

Discussion Questions

1. What are the most important HR applications a company should offer to its employees via a Web-based system? Why?
2. How could sales force automation affect salesperson productivity, marketing management, and competitive advantage?

3. How can Internet technologies be involved in improving a process in one of the functions of business? Choose one example and evaluate its business value.
4. What are several e-business applications that you might recommend to a small company to help it survive and succeed in challenging economic times? Why?
5. How do enterprise collaboration systems contribute to bottom-line profits for a business?

Questions for self-evaluation

1. What are the Functional Systems?
2. Briefly describe the Marketing Information Systems.
3. What is Manufacturing Systems?
4. What does the term "Human Resource Systems" mean?
5. What can you say about Accounting Information systems?
6. What are the main features of Accounting Information systems?
7. What are the Finance Information Systems?

7 Theme 7

Enterprise business systems

Discussion Topics

1. Customer Relationship Management

2. Enterprise Resource Planning

3. Supply Chain Management

Managing the full range of the customer relationship involves two related objectives: one, to provide the organization and all of its customer-facing employees with a single, complete view of every customer at every touchpoint and across all channels; and, two, to provide the customer with a single, complete view of the company and its extended channels.

That's why companies are turning to customer relationship management to improve their customer focus. CRM uses information technology to create a cross-functional enterprise system that integrates and automates many of the customer-serving processes in sales, marketing, and customer services that interact with a company's customers.

Customer relationship management is a crossfunctional enterprise system that integrates and automates many of the customer-serving processes in sales, marketing, and customer services that interact with a company's customers. CRM systems use information technology to support the many companies that are re-orienting themselves into customer-focused businesses as a top business strategy. The major application components of CRM include contact and account management; sales,

marketing, and fulfillment; customer service and support; and retention and loyalty programs, all aimed at helping a company acquire, enhance, and retain profitable relationships with its customers as a primary business goal.

The major application clusters in customer relationship management: Contact and Account Management, Sales, Marketing and Fulfillment, Customer Service and Support, Retention and Loyalty Programs. There are Three Phases of CRM such as Acquire, Enhance, and Retain

Businesses of all kinds have now implemented enterprise resource planning (ERP) systems. ERP serves as a cross-functional enterprise backbone that integrates and automates many internal business processes and information systems within the manufacturing, logistics, distribution, accounting, finance, and human resource functions of a company. Enterprise resource planning is a cross-functional enterprise system driven by an integrated suite of software modules that supports the basic internal business processes of a company.

Starting an e-business takes ideas, capital, and technical savvy. Operating one, however, takes supply chain management (SCM) skills. A successful SCM strategy is based on accurate order processing, just-in-time inventory management, and timely order fulfillment.

Supply chain management is a cross-functional interenterprise system that integrates and automates the network of business processes and relationships between a company and its suppliers, customers, distributors, and other business partners. The goal of SCM is to help a company achieve agility and responsiveness in meeting the demands of its customers and needs of its suppliers, by enabling it to design, build, and sell its products using a fast, efficient, and lowcost network of business partners, processes, and relationships, or supply chain.

The key benefits of supply change management: Learn to design supply chains that improve supply chain profitability; Use product design, strategic sourcing, and pricing to most efficiently match supply and demand; Build and maximize supply chain coordination and collaboration; Identify supply chain risks and design risk mitigation strategies; Explore purchasing, production, and distribution strategies for a global environment.

Tasks for independent work

1. Salespeople are generally known for their independence and emphasis on efficient time management, and not always for their willingness to adopt new technologies pushed by management. What are some of the approaches that we can use to foster adoption? What other alternatives can you think of?
2. What offerings are available in the ERP marketplace today that was not available when the companies first started investing in the technology? What new functionality do these offerings have? Research current ERP alternatives and prepare a report comparing their major features.
3. The ability to accurately forecast demand is one of the major issues for companies. Go online and research which technologies companies are

employing today to improve this aspect of their supply chains. Prepare a presentation to share your findings with the rest of your class.

Discussion Questions

1. Should every company become a customer-focused business? Why or why not?
2. Why would systems that enhance a company's relationships with customers have such a high rate of failure?
3. How could some of the spectacular failures of ERP systems have been avoided?
4. Should companies continue to use EDI systems? Why or why not?
5. How can the problem of overenthusiastic demand forecasts in supply chain planning be avoided?
6. What challenges do you see for a company that wants to implement collaborative SCM systems? How would you meet such challenges?
7. Should companies install e-business software suites or "best of breed" e-business software components? Why?

Questions for self-evaluation

1. What is Customer relationship management?
2. What is the purpose of CRM system?
3. What are the major application components of CRM?
4. What are Phases of CRM?
5. What does Enterprise resource planning mean?
6. What are the major application components of enterprise resource planning?
7. What is the goal of Supply Chain Management?
8. What is Electronic data interchange (EDI) in Supply Chain Management?
9. What Stages are in the use of supply chain management?

8 Theme 8

Decision Support Systems in a Business Organization

Discussion Topics

1. What are Decision Support Systems?

2. Characteristics and Capabilities of DSSs

3. DSS Components

Decision support systems (DSSs) are computer-based information systems that combine models and data in an attempt to solve semistructured and some unstructured problems with extensive user involvement.

A DSS is: computer based, model driven, management oriented, addresses non-structured problem, adaptive to user's insights, supportive for a decision. DSSs can examine numerous alternatives very quickly. DSSs can provide a systematic risk analysis; can be integrated with communications systems and databases; can be used to support group work; can perform these functions at relatively low cost.

DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, and personal knowledge, or business models to identify and solve problems and make decisions. Typical information that a decision support application might gather and present includes: inventories of information assets (including legacy and relational data sources, cubes, data warehouses, and data marts), comparative sales figures between one period and the next, projected revenue figures based on product sales assumptions.

Using the relationship with the user as the criterion, DSS are differentiating as passive, active, and cooperative DSS. A passive DSS is a system that aids the process of decision making, but that cannot bring out explicit decision suggestions or solutions. An active DSS can bring out such decision suggestions or solutions. A cooperative DSS allows for an iterative process between human and system towards the achievement of a consolidated solution: the decision maker (or its advisor) can modify, complete, or refine the decision suggestions provided by the system, before sending them back to the system for validation, and likewise the system again improves, completes, and refines the suggestions of the decision maker and sends them back to them for validation.

Three fundamental components of DSS architecture are: the database (or knowledge base), the model (i.e., the decision context and user criteria), the user interface. Similarly to other systems, DSS systems require a structured approach. Such a framework includes people, technology, and the development approach. DSS components may be classified as: Inputs: Factors, numbers, and characteristics to analyze; User Knowledge and Expertise; Inputs requiring manual analysis by the user; Outputs: Transformed data from which DSS "decisions" are generated; Decisions: Results generated by the DSS based on user criteria.

DSS is extensively used in business and management. Executive dashboard and other business performance software allow faster decision making, identification of negative trends, and better allocation of business resources. Due to DSS all the information from any organization is represented in the form of charts, graphs i.e. in a summarized way, which helps the management to take strategic decision.

Tasks for independent work

1. Information quality is central to the approach toward decision making taken by these organizations. What other elements must be present for this approach to be successful (technology, people, culture, and so forth)?
2. A number of major companies have launched projects geared toward improving their business analytics and decision-making capabilities in the

last few years. Go online and research other examples in this trend. What are the similarities? What are the differences? Prepare a report.
3. If you had to apply these ideas to your academic career, what would your dashboard and/or scorecard look like? What would be the sources of information? How you would measure whether you are making progress toward attaining your goals?

Discussion Questions

1. Are the form and use of information and decision support systems for managers and business professionals changing and expanding? Why or why not?
2. Has the growth of self-directed teams to manage work in organizations changed the need for strategic, tactical, and operational decision making in business?
3. What is the difference between the ability of a manager to retrieve information instantly on demand using an MIS and the capabilities provided by a DSS?
4. What experiences and qualifications are important in preparing managers for "fact-based" decision making? How are those obtained?
5. In what ways does using an electronic spreadsheet package provide you with the capabilities of a decision support system?
6. Are enterprise information portals making executive information systems unnecessary? Explain your reasoning.
7. Which applications of DSS have the most potential value for use in the operations and management of a business? Defend your choices.

Questions for self-evaluation

1. How can you Define and describe Decision Support Systems?
2. What types of Decision Support Systems do you know?
3. What is the Database Management in DSS?
4. What are the Management requirements of the Decision Support Systems?
5. What can you say about Evaluation of an appropriate Decision Support Systems?
6. What can you say about architecture of DSS?
7. What are Group Decision Support Systems?

9 Theme 9

Artificial Intelligence, Expert Systems, and Neural Networks

Discussion Topics

1. Artificial Intelligence
2. Expert Systems
3. Neural Networks

Artificial Intelligence is a branch of science dealing with behavior, learning, and adaptation in machines. There are Two Categories of AI systems: Conventional and Computational. The two most common types of AI are expert systems and neural networks. Conventional Artificial Intelligence is a method involving the use of structured formulas and statistical analysis. Methods include: Expert systems, Case based reasoning, Bayesian networks, Behavior based AI.

The central problems (or goals) of AI research include reasoning, knowledge, planning, learning, natural language processing (communication), perception and the ability to move and manipulate objects. General intelligence is among the field's long-term goals. Approaches include statistical methods, computational intelligence, soft computing (e.g. machine learning), and traditional symbolic AI. Many tools are used in AI, including versions of search and mathematical optimization, logic, methods based on probability and economics. The AI field draws upon computer science, mathematics, psychology, linguistics, philosophy, neuroscience and artificial psychology.

In artificial intelligence, an expert system is a computer system that emulates the decision-making ability of a human expert. Expert systems are designed to solve complex problems by reasoning about knowledge, represented mainly as if–then rules rather than through conventional procedural code. An expert system is divided into two subsystems: the inference engine and the knowledge base. The knowledge base represents facts and rules. The inference engine applies the rules to the known facts to deduce new facts. Inference engines can also include explanation and debugging abilities.

Artificial neural networks are computational models inspired by biological neural networks, and are used to approximate functions that are generally unknown. Particularly, they are inspired by the behavior of neurons and the electrical signals they convey between input (such as from the eyes or nerve endings in the hand), processing, and output from the brain (such as reacting to light, touch, or heat). The way neurons semantically communicate is an area of ongoing research. Most artificial neural networks bear only some resemblance to their more complex biological counterparts, but are very effective at their intended tasks (e.g. classification or segmentation). Neural networks can be hardware- (neurons are represented by physical components) or software-based (computer models), and can use a variety of topologies and learning algorithms.

Neural network software is used to simulate, research, develop, and apply artificial neural networks, software concepts adapted from biological neural networks, and, in some cases, a wider array of adaptive systems such as artificial intelligence and machine learning.

Tasks for independent work

1. Are virtual stores like this one just an incremental innovation on the way marketing tests new product designs? Or do they have the potential to radically reinvent the way these companies work? Explain your reasons.
2. What industries could benefit from deployments of virtual reality? Leaving aside the cost of the technology, what new products or services could you envision within those industries? Provide several examples.
3. What is the current cutting-edge technology in virtual reality, and how are companies using it? Go online to research this topic and prepare a presentation to share your work.

Discussion Questions

1. What is the business benefits derived from the AI technology implementation?
2. With technologies will consumers entirely do away with retailers sometime in the future, shopping only through virtual representations of a retail store?
3. What are some of the limitations or dangers you see in the use of AI technologies such as expert systems, virtual reality, and intelligent agents?
4. What could be done to minimize the limitations or dangers?
5. What can you say about Virtual reality as a fast-growing area of artificial intelligence?
6. Give Examples of different types of intelligent agents.
7. What are the opportunities of using artificial intelligence in business?

Questions for self-evaluation

1. What does Virtual Reality mean?
2. What are the major application domains of artificial intelligence?
3. What is the goal of AI?
4. What are the application areas of artificial intelligence?
5. What is an Expert system?
6. What are the benefits of expert systems?
7. What does Neural Network mean?

Recommended literature

1. Afuah, Allan, and Christopher Tucci. Internet Business Models and Strategies . New York: McGraw-Hill/Irwin, 2001.
2. Charles Parker, Thomas Case. (2000). "Management Information Systems: Action & Strategy". (2nd Ed). Chapter 2 & 4
3. Developing Management Skills, 5/e David A. Whetten, Brigham Young University Kim S. Cameron, University of Michigan, Prentice Hall, 2002
4. Effy Oz Management Information Systems, Sixth Edition. Thomson course technology, copyright © 2009
5. Information Systems Analysis and Modeling: An Information MacRodynamics Approach (Kluwer International Series in Engineering and Computer Science, 2"d Edition by Vladimir S. Lerner Hardcover (1999)
6. James O'Brien. (2010). "Introduction to Information Systems: A Networked Enterprise Perspective". (10nd Ed). Chapter 10,12
7. Kenneth C. Laudon & Jane P. Laudon (2011). "Management Information Systems: Managing a Digital Firm".(7th Ed). Chapter 3
8. Management Information Systems ActiveBook, 7/e Kenneth C. Laudon, New York University Jane P. Laudon, Azimuth Information Systems, Prentice Hall, 2002
9. Management information systems. Trainee's Material. First Edition 2002 Copyright © Genetic Computer School, Singapore.
10. Workplace Studies: Recovering Work Practice and Informing System Design by Paul Luff (Editor), Jon Hindmarsh, Christian Heath Cambridge University Press, Hardcover (2000)