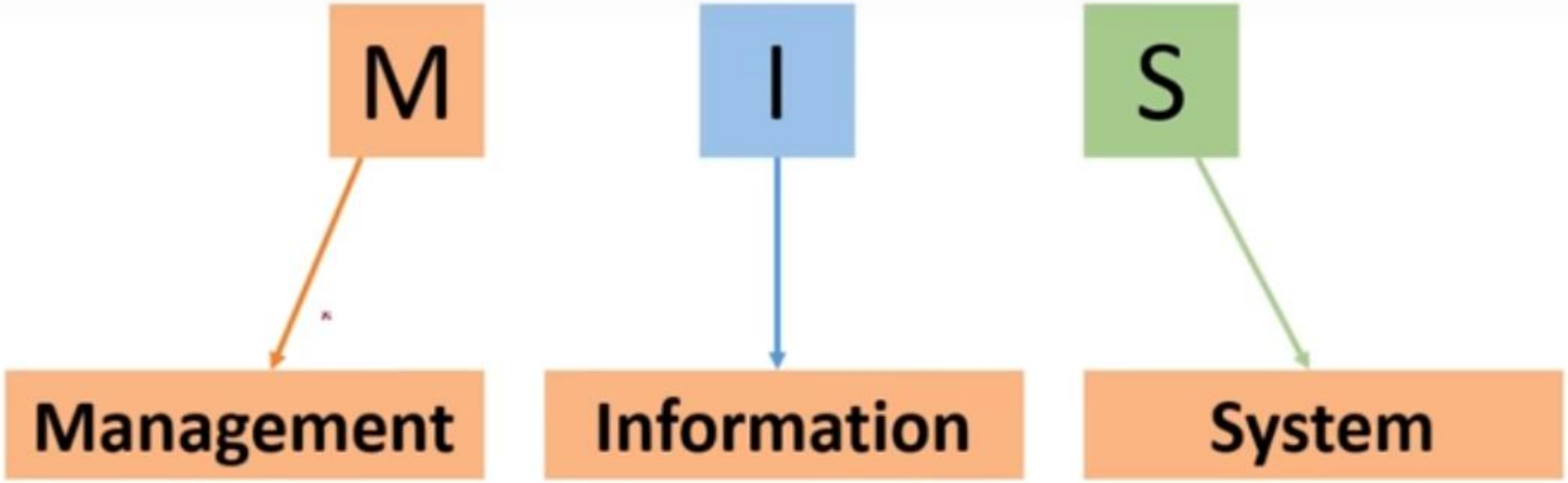
Unit 1: Foundations of Information Systems (IS) in Business LH 7

- The real world of information system
- Information system
- The fundamental Roles of IS in Business
- The role of e-business in business
- **Types of Information Systems:**
  - Operations support systems
  - Management support systems
  - Other classifications of IS

- **Managerial Challenges of Information Technology (IT)**
  - Success and Failure with IT
  - Developing IS solutions
  - Challenges and Ethics of IT
  - Challenges of IT careers
  - The IS function



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DATA

- Set of values of qualitative or quantitative variables
- It is a “given,” or fact; a number, a statement, or a picture
- It represents something in the real world
- It is the raw materials in the production of information
- Eg-Each student's test score is one piece of data.

Information

- When data is processed, organized, structured or presented in a given context so as to make it useful, it is called information.
- It is data that have meaning within a context
- It shows data in relationships
- It describes data after manipulation
- Eg-The average score of a class or of the entire school is information that can be derived from the given data.

System

- A system can be define as set of interrelated components working together to achieve a common set of objectives, by accepting inputs and producing outputs in an organized transformation process.

- A system has three basic interacting components on function are
  1. Input: Captures raw data from organization or external environment
  2. Processing: Converts raw data into meaningful form
  3. Output: Transfers processed information to people or activities that use it.

  The system concept become more useful by including two additional component as
  - Feedback
  - Control

- **Feedback:**
  - Output returned to appropriate members of organization to help evaluate or correct input stage

- Control:
  - It involves monitoring and evaluating feedback to determine whether the system is moving toward the achievement of goals

A sytem with feedback and control component is sometime known as cybernetic system i.e **a self-monitoring or self-regulating system (Autopilot)**

The real world of information system .

- Information systems have become as integrated into our daily business activities as accounting, finance, operations management, marketing, human resource management, or any other major business function.

- Information technologies, including Internet-based information systems, are playing vital and expanding roles in business.

- Information technology can help all kinds of businesses improve the efficiency and effectiveness of their business processes, managerial decision making, and workgroup collaboration, which strengthens their competitive positions in rapidly changing marketplaces.

- Information technologies and systems are, quite simply, an essential ingredient for business success in today's dynamic global environment.

- Since Information and Communication Technologies dominate the business world nowadays, we utilize these technologies in not only businesses but daily lives as well. For example, use ATMs for money transferring, cash withdrawal etc. Behind the simple process is a full 'process' that is working which involves connecting with the bank central computers, verifying the card, checking the account for money, transferring the amount. Also we have the Internet, with which we connect with friends and family, search for information, using it for both entertainment and educational purposes and using cell phones for communicating. We send e-cards on SMS for wishing Eid instead of sending paper cards.

- So having said that, basically our life styles are changing because of the technologies we use. Similarly business dynamics are changing in the face of emerging technologies and new software, thus increasing the competition in businesses. That's why businesses students need to have an idea for the new technologies so as to enable students to access the problems and opportunities when using Information Technology in business. Also understand transformational changes within and outside the industry.

- Introducing MIS now, is to make the students able to better understand the other course work. E.g. studying ‘Change Management’. Doing MIS now, you would know better why you need to do the change management. What challenges come with using and installing or converting to a new IS.

MIS Learning Outcome

- Have understanding of the Information Systems and its associated concepts
- Able to recognize the importance and use of various Information and Communication Technologies (ICTs)
- Able to analyse decision making process
- Have understanding of the various types of Information Systems
- Have knowledge of the system development
- Appreciate the social and ethical considerations of MIS within organizations

What is an Information System?

- An organized combination of…
  - People
  - Hardware and software
  - Communication networks
  - Data resources
  - Policies and procedures

- Which
  - Stores, retrieves, transforms, and disseminates information in an organization

Management Information Systems

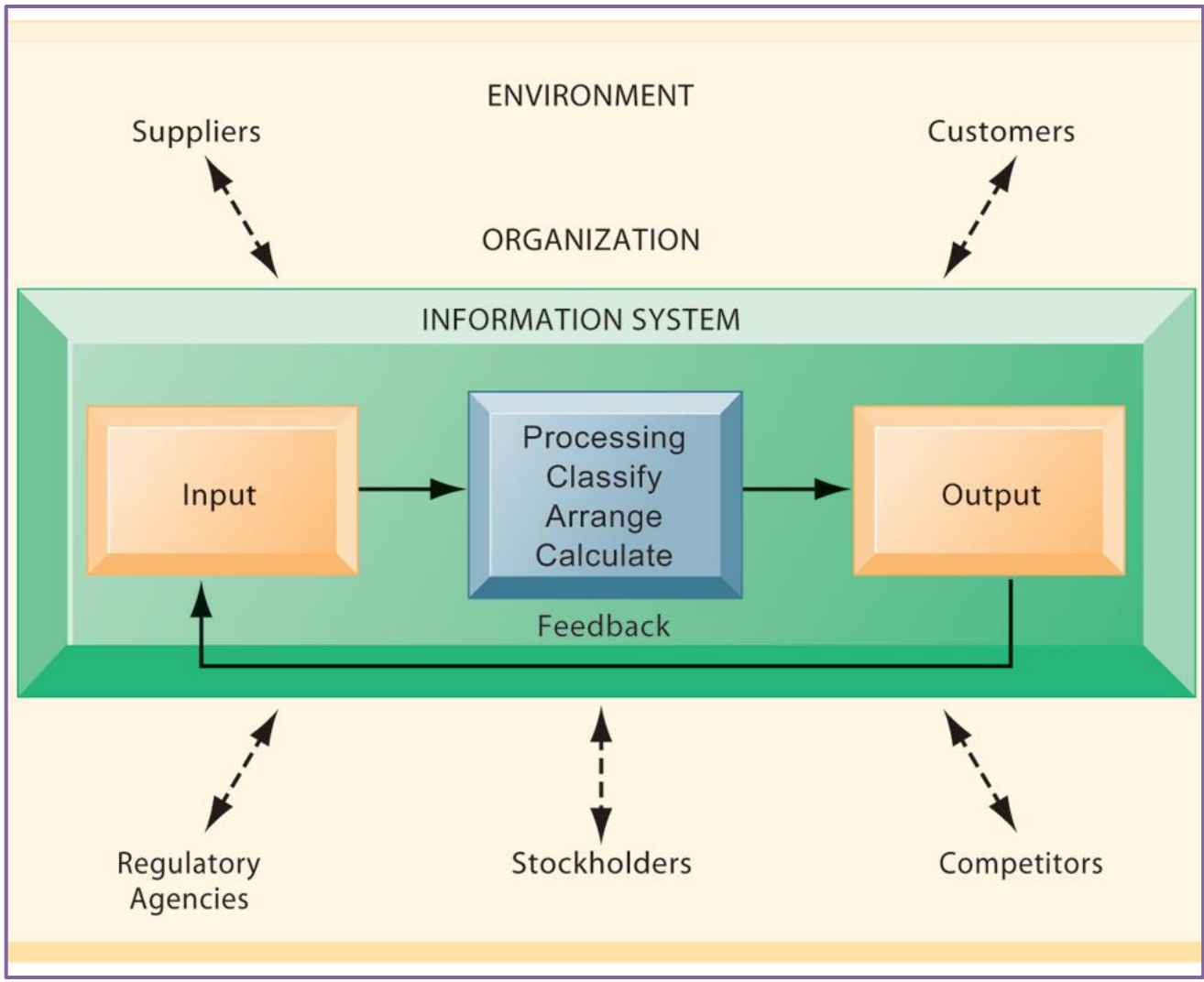
Perspectives on Information Systems

Functions of an Information System

An information system contains information about an organization and its surrounding environment.

Three basic activities—input, processing, and output—produce the information organizations need.

Feedback is output returned to appropriate people or activities in the organization to evaluate and refine the input. Environmental actors, such as customers, suppliers, competitors, stockholders, and regulatory agencies, interact with the organization and its information systems.



What Should Business Professionals Know?

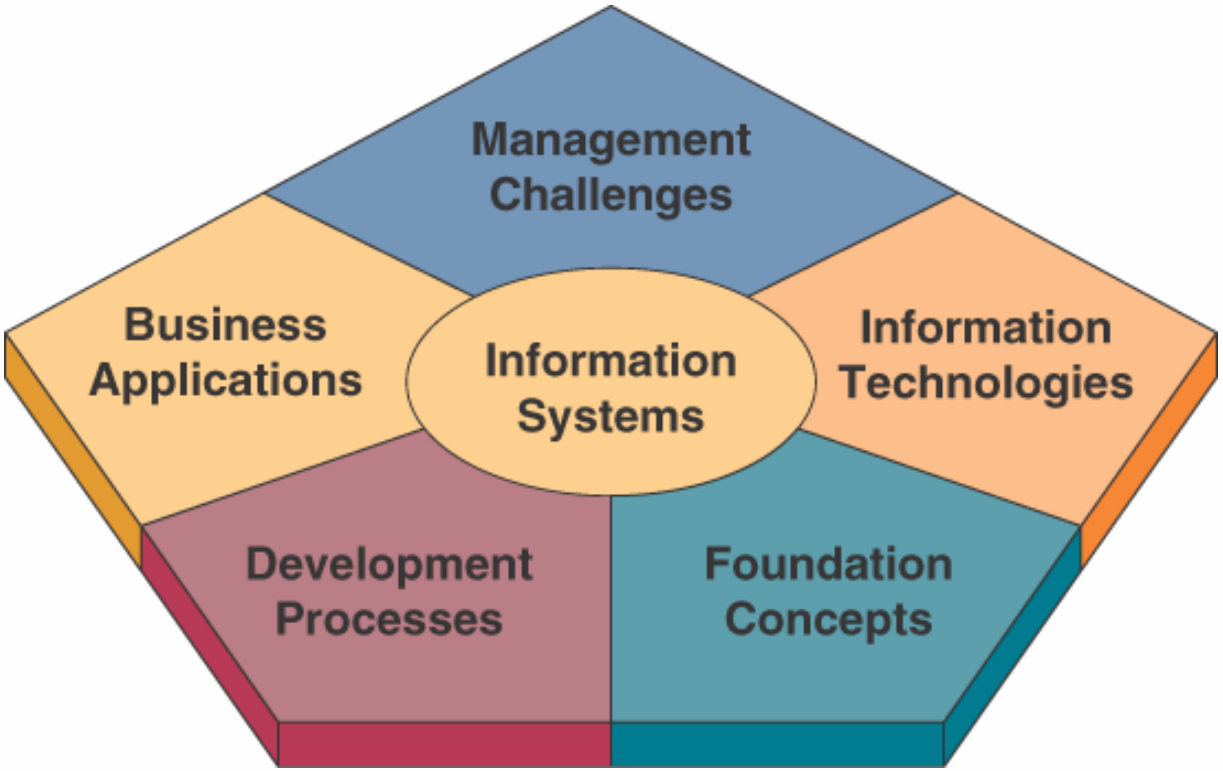


Fig: A framework that outlines the major areas of information systems knowledge needed by business professionals

- **Foundation Concepts:** Role of information system in management.

- **Information Technologies:** Technology used in IS that is, hardware, software, networks, data management, and many Internet-based technologies.

- **Business Applications**: Uses of Information for business operation.

- **Development Processes:** How business professionals and information specialists plan, develop, and implement information systems to meet business opportunities.

- **Management Challenges:** Challenges to manage information technology to meet company objective and co-ordinate different entity of business.

Role of information system in Business

Learning Objectives

- **Understanding the effects of information systems on business and their relationship to globalization.**
- **Explain why information systems are so essential in business today.**
- **Define an information system and describe its management, organization, and technology components.**
- **Define complementary assets and explain how they ensure that information systems provide genuine value to an organization.**
- **Describe the different academic disciplines used to study information systems and explain how each contributes to our understanding of them.**
- **Explain what is meant by a sociotechnical systems perspective.**

Fundamental Roles of IS in Business

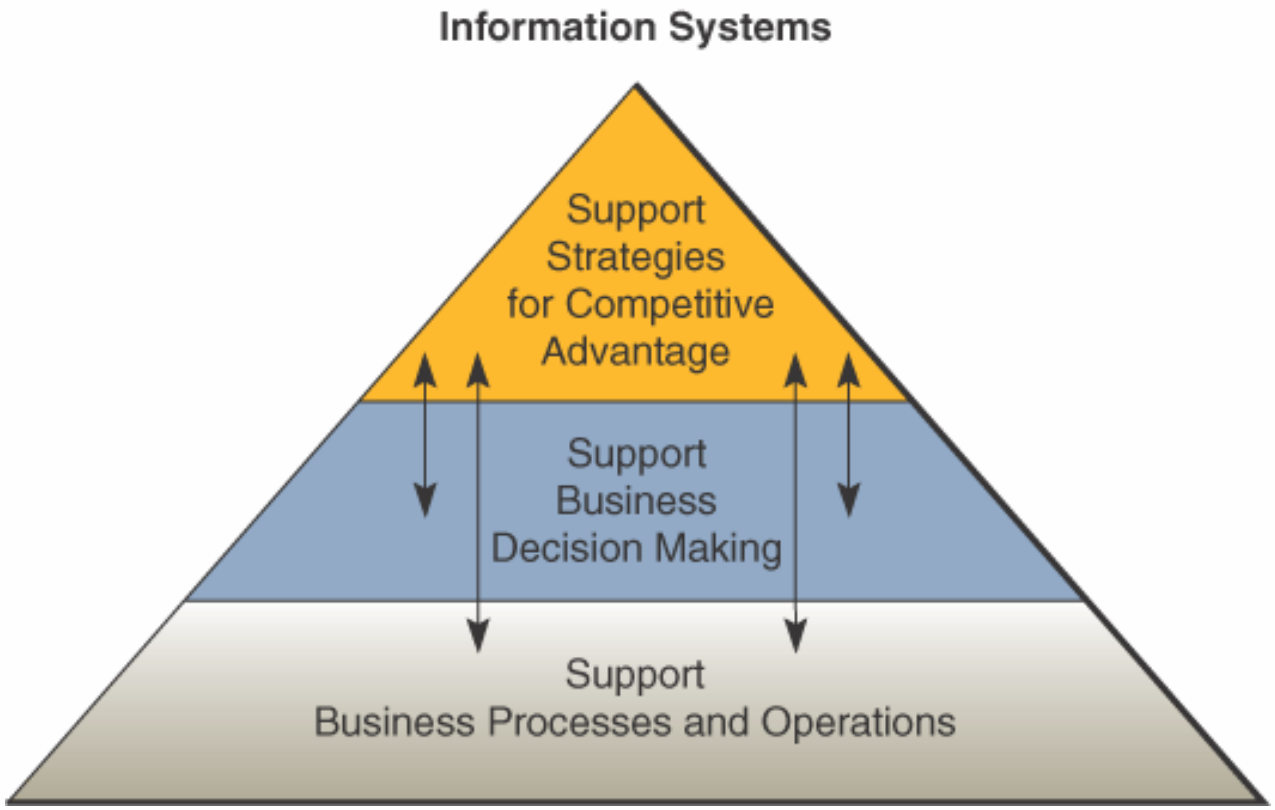


Fig: The three fundamental roles of the business applications of information systems.

Support of Business Processes and Operations:

- Involves dealing with information system that support the business process and operation in a business.
- For example, most retail stores now use computer based information systems to help their employees record customer purchases, keep track of inventory, pay employees, buy new merchandise, and evaluate sales trends. Store operations would grind to a halt without the support of such information systems.

Support of Business Decision Making:

- Help decisions maker to make better decision and attempt to gain a competitive advantage.

- For example, decisions about what lines of merchandise need to be added or discontinued and what kind of investments they require are typically made after an analysis provided by computer-based information systems. This function not only supports the decision making of store managers, buyers, and others, but also helps them look for ways to gain an advantage over other retailers in the competition for customers.

Support of Strategies for Competitive Advantage:

- Helps to gain strategic advantage over competitors requires the innovative application of information technologies.

- For example, store management might make a decision to install touch-screen kiosks in all stores, with links to the e-commerce Web site for online shopping. This offering might attract new customers and build customer loyalty because of the ease of shopping and buying merchandise provided by such information systems. Thus, strategic information systems can help provide products and services that give a business a comparative advantage over its competitors.

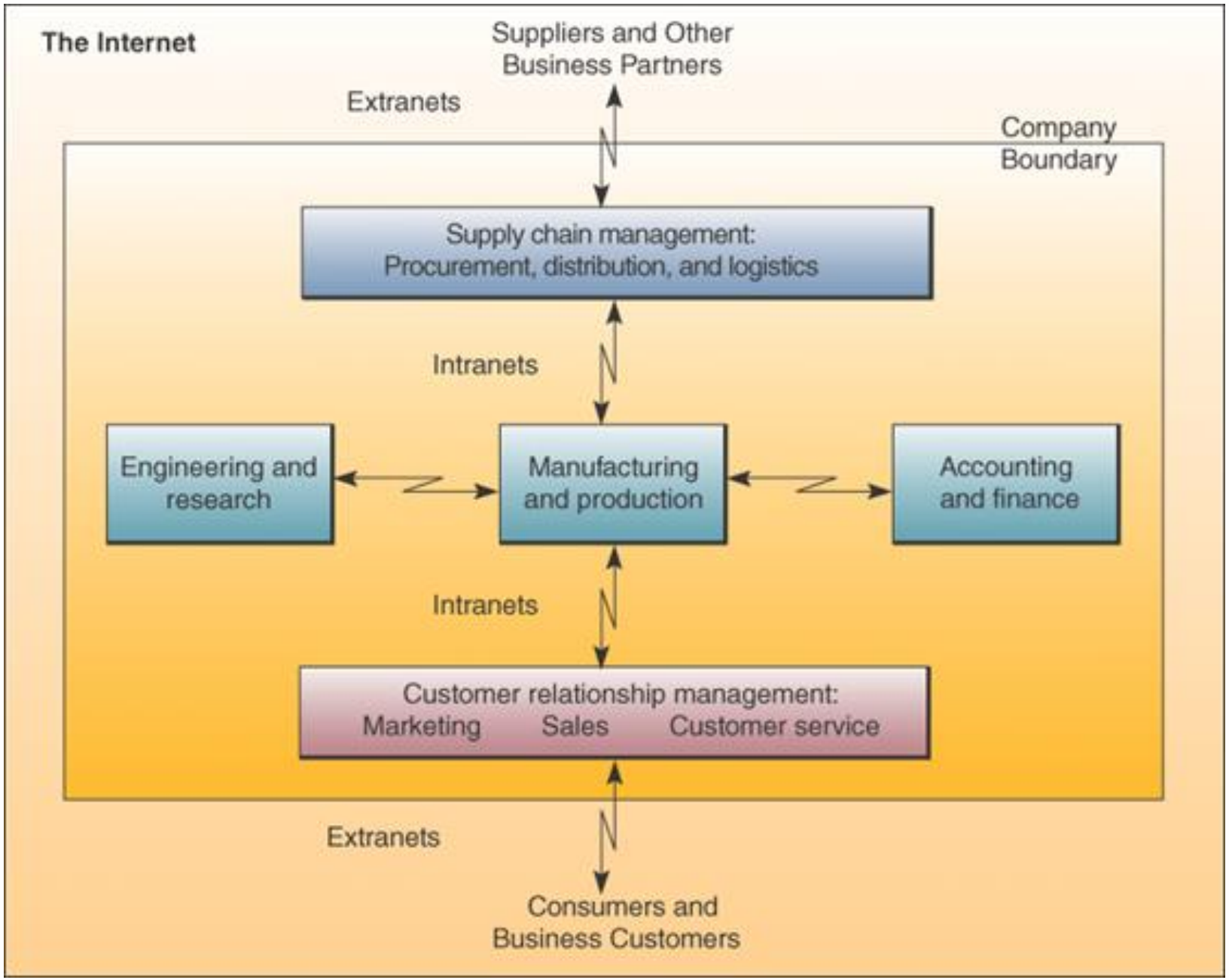
The role of e-business in business.

What is E-Business?

- Using Internet technologies to empower…
  - Business processes
  - Electronic commerce
  - Collaboration within a company
  - Collaboration with customers, suppliers, and other business stakeholders
- In essence, an online exchange of value

- The Internet and Internet-like networks - those inside the enterprise (intranet) and between an enterprise and its trading partners (extranet) - have become the primary information technology infrastructure that supports the e-business applications of many companies.

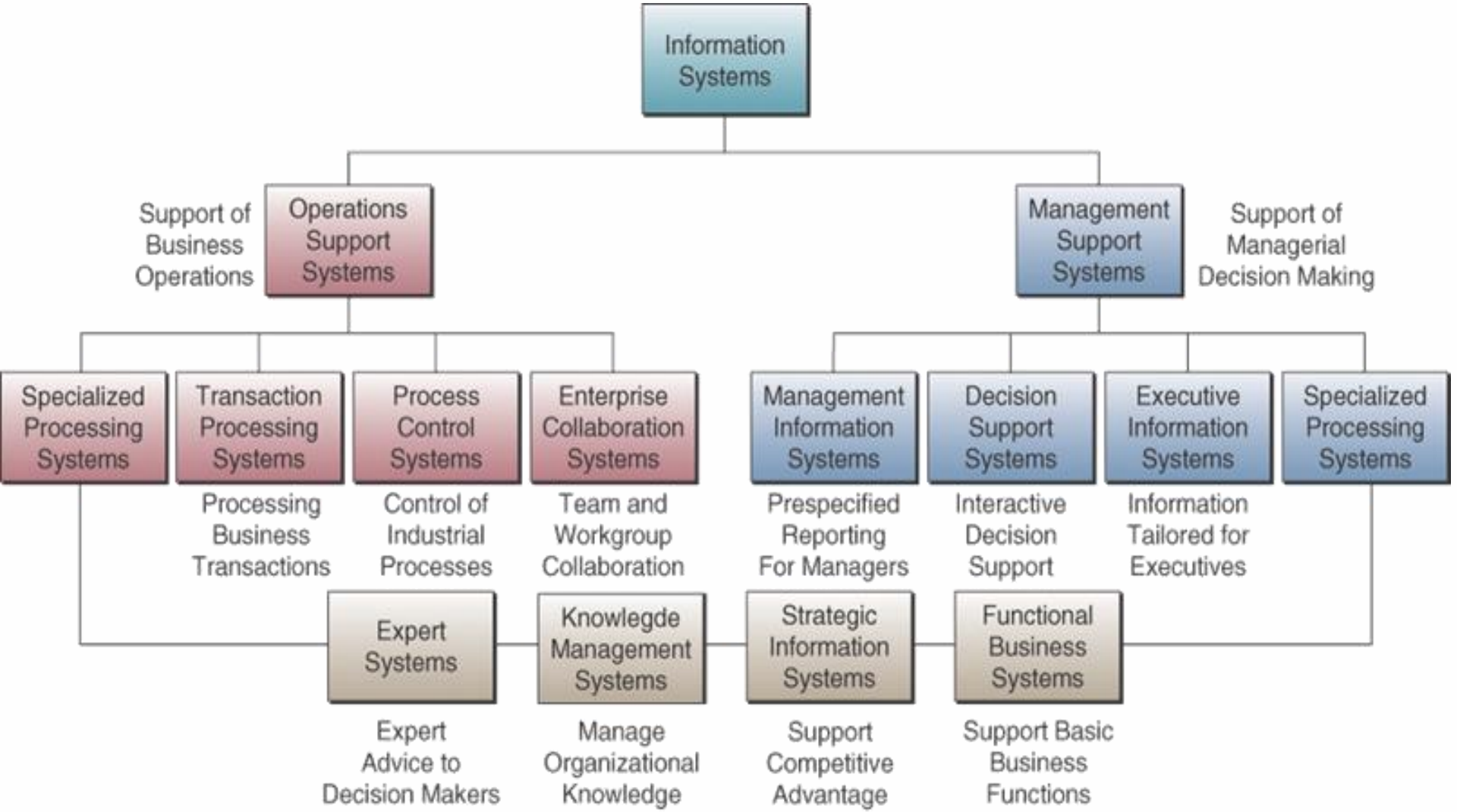
How E-Business is Being Used



- These companies rely on e-business applications to:

- Reengineering
  - Internal business processes
  - Helps to achieve scalabity, Trackability
- Enterprise collaboration systems
  - Support communications, coordination and coordination among teams and work groups
- Electronic commerce
  - Buying, selling, marketing, and servicing of products and services over networks

Types of Information Systems:



Types of Information Systems

- **Operations Support Systems**
  - Efficiently process business transactions
  - Control industrial processes
  - Support communication and collaboration
  - Update corporate databases
  - however, they do not emphasize the specific information products that can best be used by managers.

- **Management Support Systems**
  - Provide information as reports and displays
  - Give direct computer support to managers during decision-making

Types of OSS (Operation Support System)

- Transaction Processing Systems
  - Record and process business transactions
  - Example: sales processing, inventory systems, accounting systems

- Process Control Systems
  - Monitor and control industrial processes
  - Example: using sensors to monitor chemical processes in a petroleum refinery

- Enterprise Collaboration Systems
  - Enhance team and workgroup communication
  - Example: email, video conferencing

Two Ways to Process Transactions

- **Batch Processing**
  - Accumulate transactions over time and process periodically
  - Example: a bank processes all checks received in a batch at night

- **Online Processing**
  - Process transactions immediately
  - Example: a bank processes an ATM withdrawal immediately

Management Support Systems

- What do they do?
  - Provide information and support for effective decision making by managers
    - Management information systems
    - Decision support systems
    - Executive information systems

Types of Management Support Systems

- **Management Information Systems (MIS)**
  - Reports and displays
  - Example: daily sales analysis reports

- **Decision Support Systems (DSS)**
  - Interactive and ad hoc support
  - Example: a what-if analysis to determine where to spend advertising dollars

- **Executive Information Systems (EIS)**
  - Critical information for executives and managers
  - Example: easy access to actions of competitors

Other Information Systems

- **Expert Systems - provide expert advice (Best Result)**
  - Example: credit application advisor. Kubero App

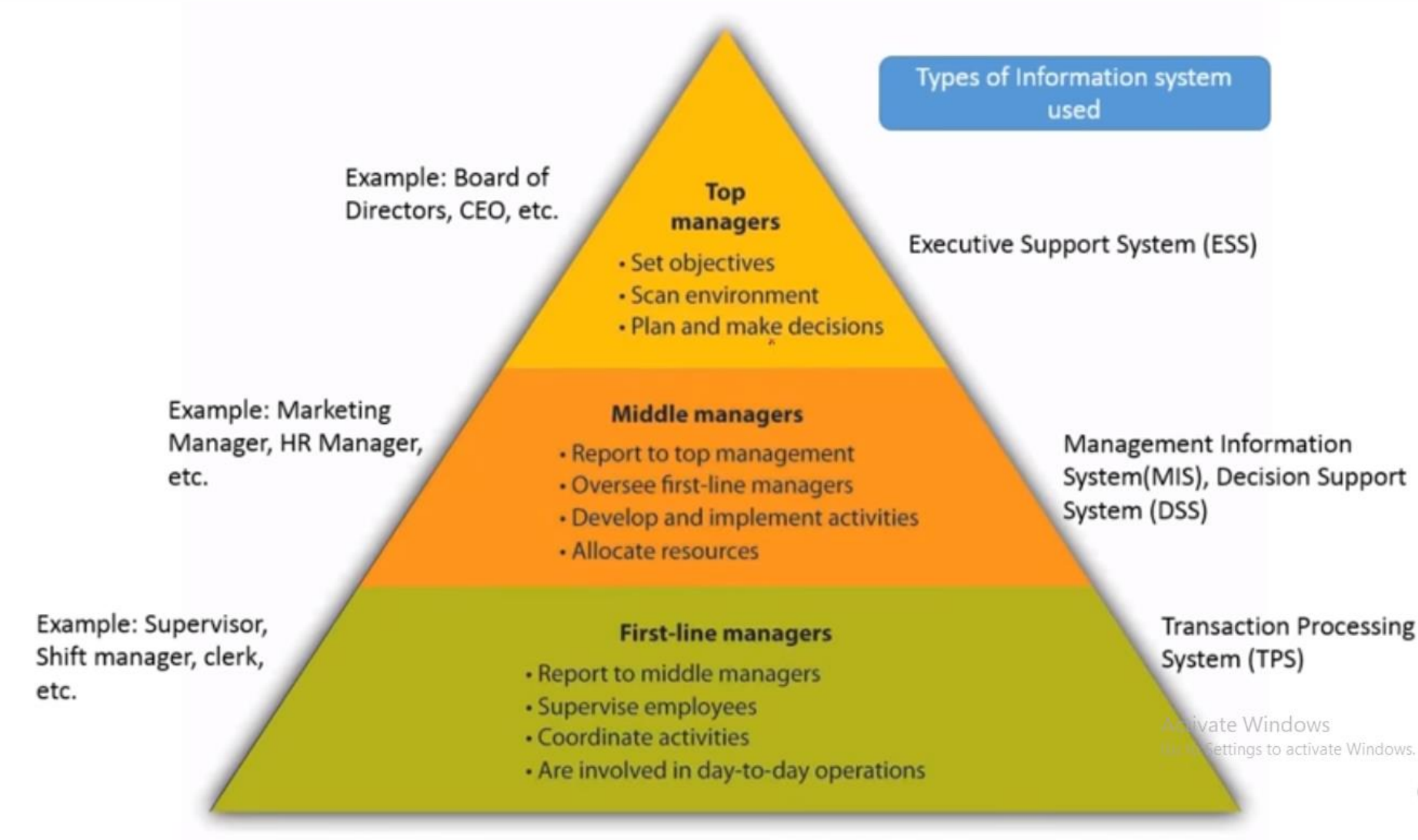
- **Knowledge Management Systems**
  - support creation, organization, and dissemination of business knowledge throughout company
  - Advise within insight.
  - It will feed data to expert system.
  - Example: intranet access to best business practices, tableau knowledge.

Strategic Information Systems

- help get a strategic advantage over customer
  - Example: shipment tracking, e-commerce Web systems

Functional Business Systems

- - focus on operational and managerial applications of basic business functions
  - Example: accounting, finance, or marketing



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Managerial Challenges of Information Technology (IT)

- **Success and Failure with IT**
- Developing IS solutions
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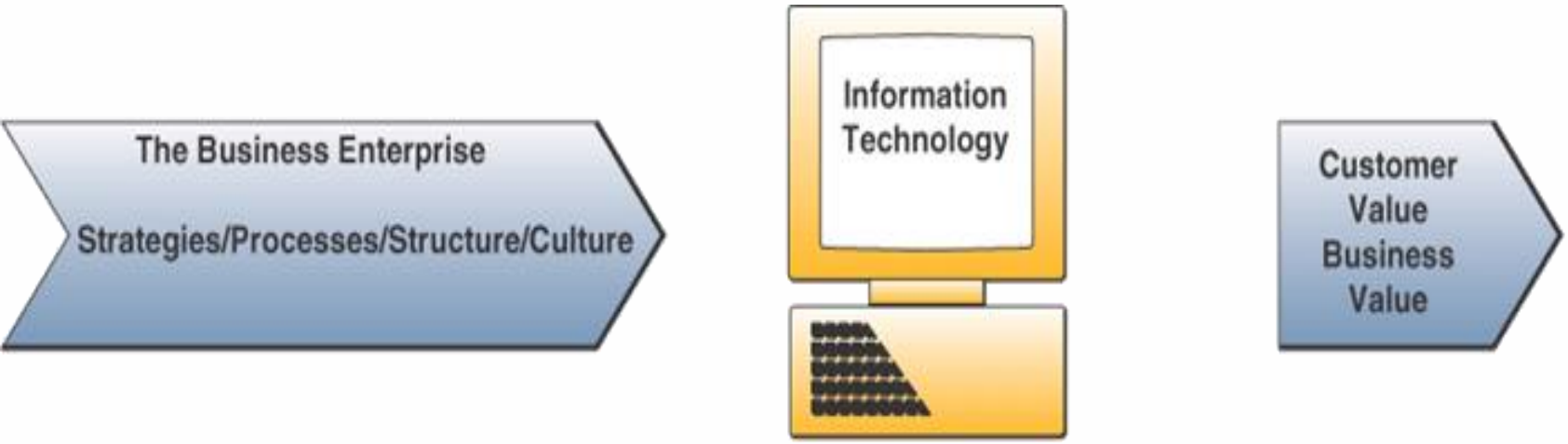
- Challenges of IT careers
- The IS function

IT Challenges and Opportunities



Business / IT Challenges

- Speed and flexibility requirements of product development, manufacturing, and delivery cycles.
- Reengineering and cross-functional integration of business processes using Internet technologies.
- Integration of e-business and e-commerce into the organization's strategies, processes, structure, and culture.

Business / IT Developments

- Use of the Internet, intranets, extranets, and the Web as the primary IT infrastructure.
- Diffusion of Web technology to internetwork employees, customers, and suppliers.
- Global networked computing, collaboration, and decision support systems.

Business / IT Goals

- Give customers what they want, when and how they want it, at the lowest cost.
- Coordination of manufacturing and business processes with suppliers and customers.
- Marketing channel partnerships with suppliers and distributors.

Measuring IT Success

- Efficiency
  - Minimize cost, time, and use of information resources.

- Effectiveness
  - Support business strategies
  - Enable business processes
  - Enhance organizational structure and culture
  - Increase customer and business value

Challenges and Ethics of IT

- **Application of IT**
  - Customer relationship management
  - Human resources management
  - Business intelligence systems

- **Potential Harm**
  - Infringements on privacy
  - Inaccurate information
  - Collusion

- **Potential Risks**
  - Consumer boycotts
  - Work stoppages
  - Government intervention

- **Possible Responses**
  - Codes of ethics
  - Incentives
  - Certification

Success and Failure with IT

- The success of an information system should not be measured only by its efficiency in terms of minimizing costs, time, and the use of information resources.

- Success should also be measured by the effectiveness of the information technology in supporting an organization's business strategies, enabling its business processes, enhancing its organizational structures and culture, and increasing the customer and business value of the enterprise.

- It is important to realize, however, that information technology and information systems can be mismanaged and misapplied in such a way that IS performance problems create both **technological and business failures.**

Developing IS Solutions

Investigate (Plan) – Recognize the problem exists.

Analyze – Investigate The current system

Design – Designing the new system

Implement – Put the new system into effect

Maintain (Use) – Use Monitor and Maintain the new System

- Most computer-based information systems are designed, and implemented using some form of systematic development process.

- In this development process, end users and information specialists design information system applications on the basis of an analysis of the business requirements of an organization.

- Examples of other activities include investigating the economic or technical feasibility of a proposed application, acquiring and learning how to use any software necessary to implement the new system, and making improvements to maintain the business value of a system.

Challenges and Ethics of IT

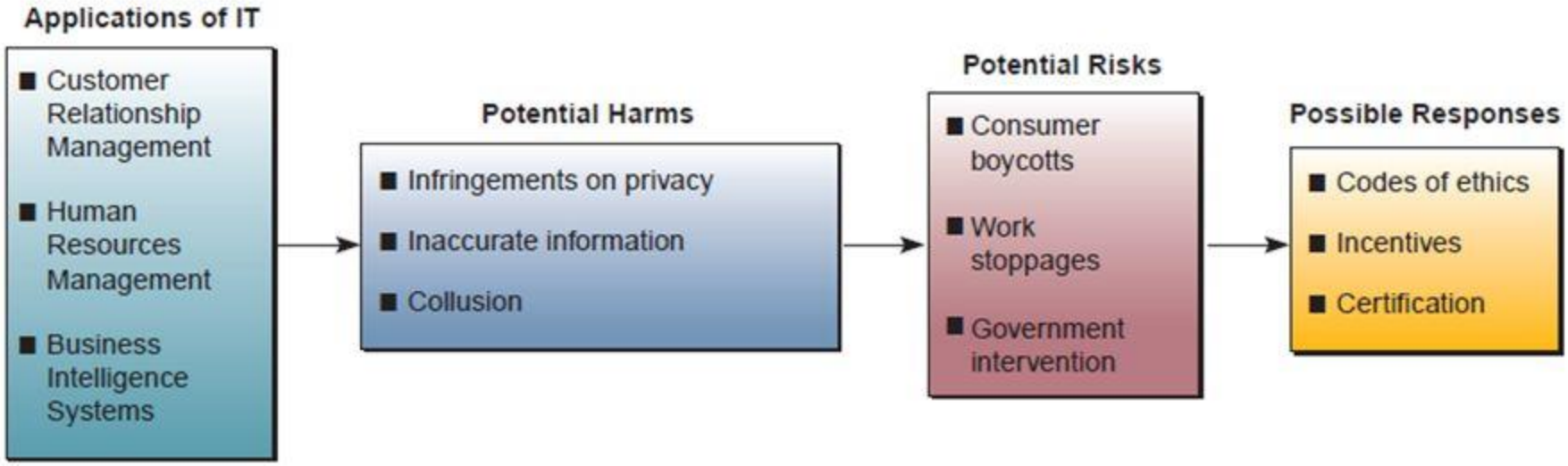


Fig : Ethical Challenge in business with implementation of IT

Challenges of IT careers:

- If you are not in an IT career, you will work regularly with IS professionals
- Employment opportunities in IS are strong.
- Business Technologist – a professional competent in both business and IT.
- U.S. Department of Labor – IS positions expected to be among fastest growing for years to come.
- Dynamic developments in business and information technologies cause constantly changing job requirements in information systems, which will ensure that the long-term job outlook in IT remains both positive and exciting

The IS function:

- A major functional area of business
- An important contributor to operational efficiency, employee productivity, morale, customer service and satisfaction
- A major source of information and support for decision making
- A vital ingredient in developing competitive products and services in the global marketplace
- A dynamic and challenging career opportunity
- A key component of today's networked business