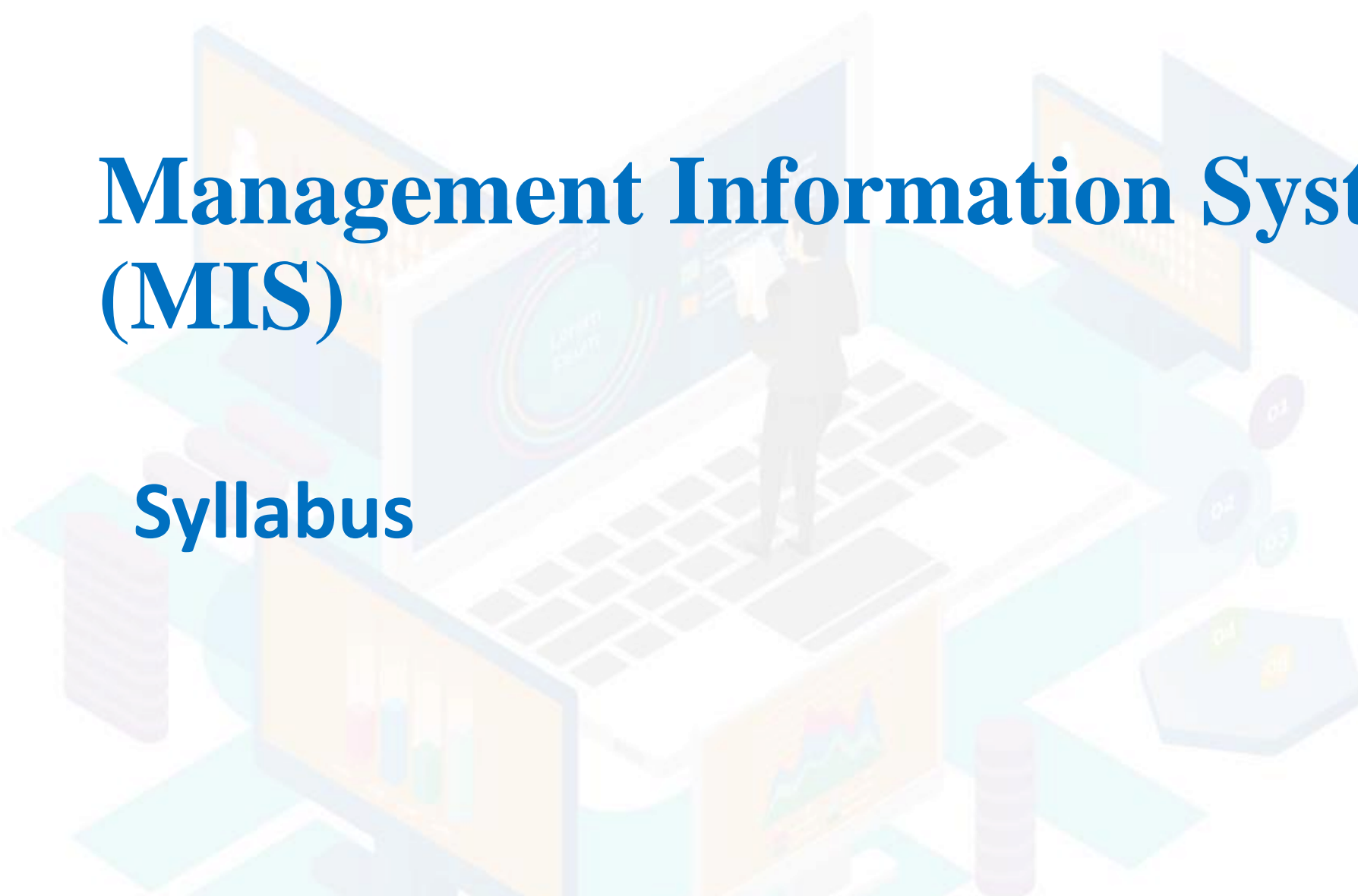


Management Information System (MIS)

Syllabus



Course Objective

- › The course is blend of Management and Technical field.
- › Discuss the roles played by information technology in today's business and define various technology architectures on which information systems are built
- › Define and analyze typical functional information systems and identify how they meet the needs of the firm to deliver efficiency and competitive advantage
- › Identify the basic steps in systems development

Course Outcomes:

Learner will be able to...

- › Explain how information systems Transform Business
- › Identify the impact information systems have on an organization
- › Describe IT infrastructure and its components and its current trends
- › Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making
- › Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses

Syllabus

- 1. Introduction To Information Systems (IS):** Computer Based Information Systems, Impact of IT on organizations, Importance of IS to Society. Organizational Strategy, Competitive Advantages and IS.
- 2. Data and Knowledge Management:** Database Approach, Big Data, Data warehouse and Data Marts, Knowledge Management Business intelligence (BI): Managers and Decision Making, BI for Data analysis and Presenting Results.
- 3. Ethical issues and Privacy:** Information Security. Threat to IS, and Security Controls.

Syllabus

4. **Social Computing** (SC): Web 2.0 and 3.0, SC in business-shopping, Marketing, Operational and Analytic CRM, E-business and E-commerce – B2B B2C. Mobile commerce

5. **Networks Wired and Wireless technology**, Pervasive computing, Cloud computing model.

6. **Information System within Organization**: Transaction Processing Systems, Functional Area Information System, ERP and ERP support of Business Process. Acquiring Information Systems and Applications: Various System development life cycle models

Assessment

- › Internal Assessment for 20 marks: Consisting Two Compulsory Class Tests
- › First test based on approximately 40% of contents and second test based on remaining
- › Question paper will comprise of total six questions, each carrying 20 marks.
- › Question 1 will be compulsory and should cover maximum contents of the curriculum.
- › Remaining questions will be mixed in nature (for example if Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3).
- › Only Four questions need to be solved.

REFERENCES:

- › Kelly Rainer, Brad Prince, Management Information Systems, Wiley
- › K.C. Laudon and J.P. Laudon, Management Information Systems: Managing the Digital Firm, 10th Ed., Prentice Hall, 2007.
- › D. Boddy, A. Boonstra, Managing Information Systems: Strategy and Organization, Prentice Hall, 2008



CHAPTER 1

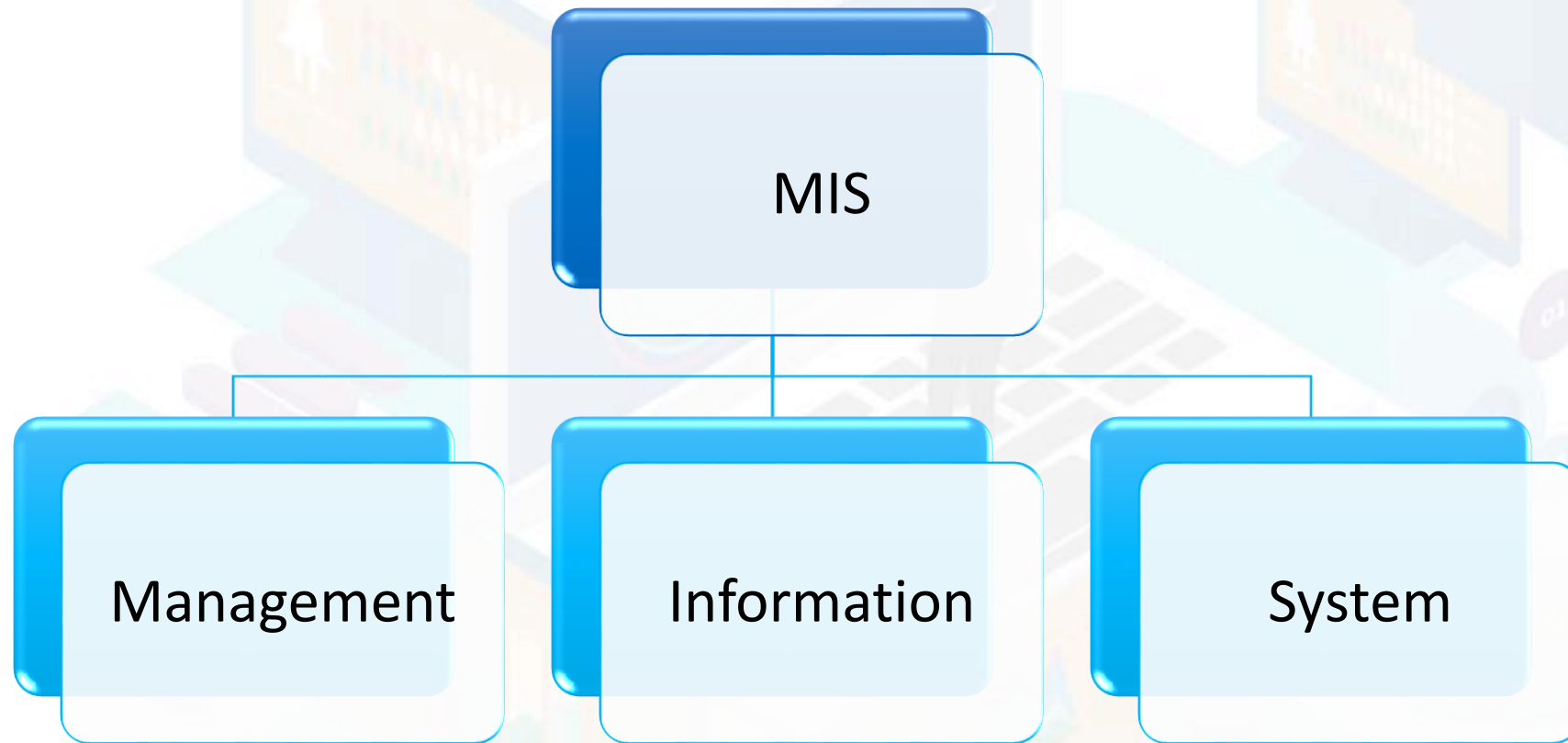
Introduction To Information Systems (IS):

Chapter 1

- › **Introduction To Information Systems (IS):**
- › **Computer Based Information Systems,**
- › **Impact of IT on organizations,**
- › **Importance of IS to Society.**
- › **Organizational Strategy, Competitive Advantages and IS.**

LEARNING OBJECTIVES

- › Identify the reasons why information systems is important in today's world.
- › Describe the various types of computer-based information systems in an organization
- › Identify positive and negative societal effects of the increased use of information technology



The Problem

In the months leading up to the terrorist attacks of September 11, 2001, the U.S. government had all the necessary clues to stop the al Qaeda perpetrators. The attackers were from countries known to harbor terrorists, they entered the United States on temporary visas, they had trained to fly civilian airliners, and they purchased one-way airplane tickets on September 11.

Unfortunately for thousands of workers in the World Trade Center, those clues were located in different databases scattered across many government agencies. Organizations like the CIA and the FBI maintain thousands of databases, each with its own data: financial records, DNA samples, voice and other sound samples, video clips, maps, floor plans, human intelligence reports from all over the world, and many other types of data. Integrating all of those data into a coherent whole is potentially overwhelming. In 2001 there was no tool available that would have enabled government analysts to integrate all of these different types of data that were dispersed across so many locations.

[A Tool to
Combat
Terrorism
and Fight
Crime]



Business are Changing.....

e.g. 1 “Before Pandemic and in Pandemic”

e.g. 2 “Brick and Mortar” And “Click and Order”

π

Google

Google Search

I'm Feeling Lucky

Google offered in: हिन्दी বাংলা తెలుగు मराठी தமிழ் ગુજરાતી ಕನ್ನಡ മലയാളം ਪੰਜਾਬੀ



Digital India
Power To Empower

IMPORTANT TERMS FOR IS

01100
10110
11110

DATA

INFO

INFORMATION

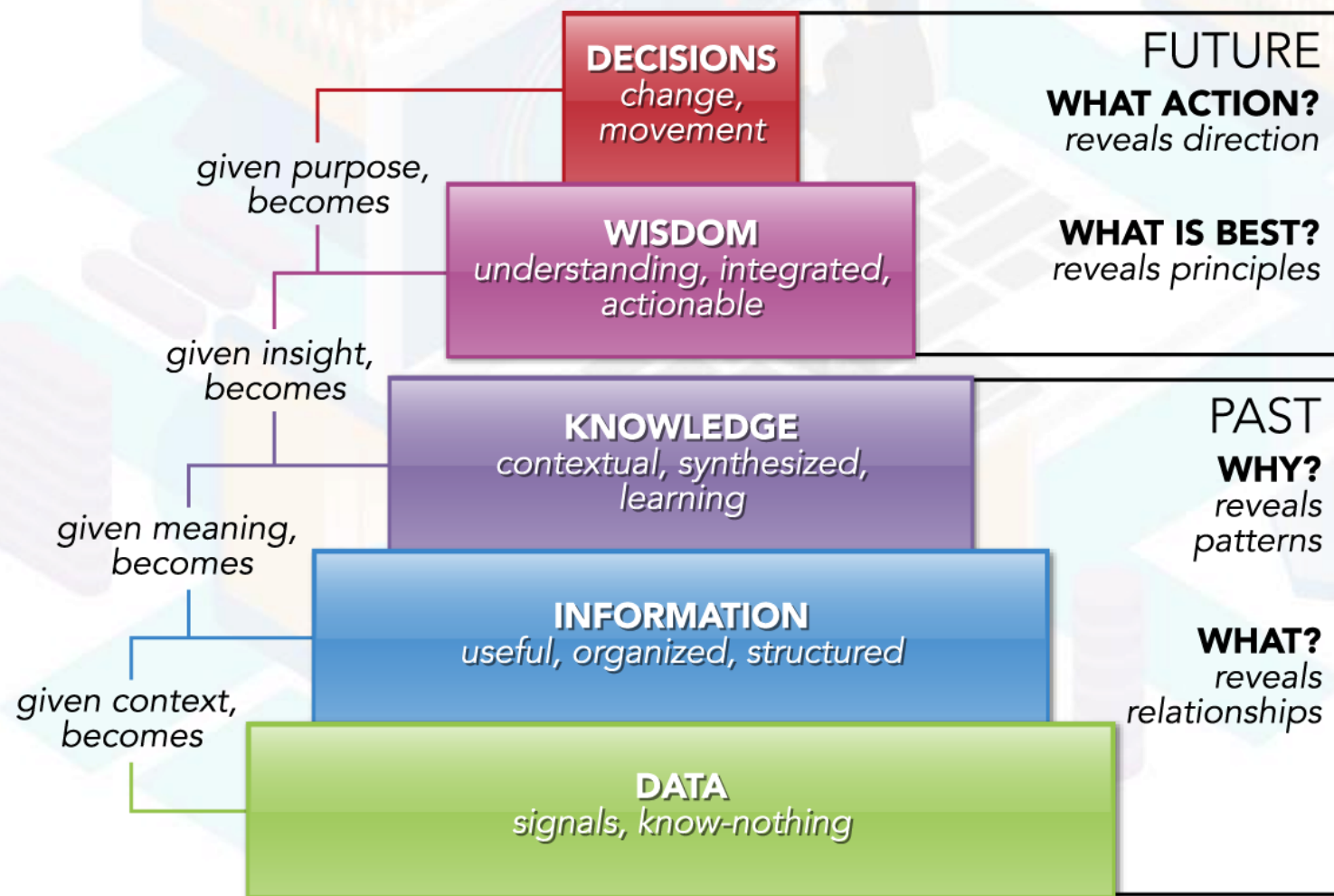


KNOWLEDGE

Wisdom

WISDOM

Data, Information, Knowledge, Wisdom



Data

- 100

Information

- 100 miles

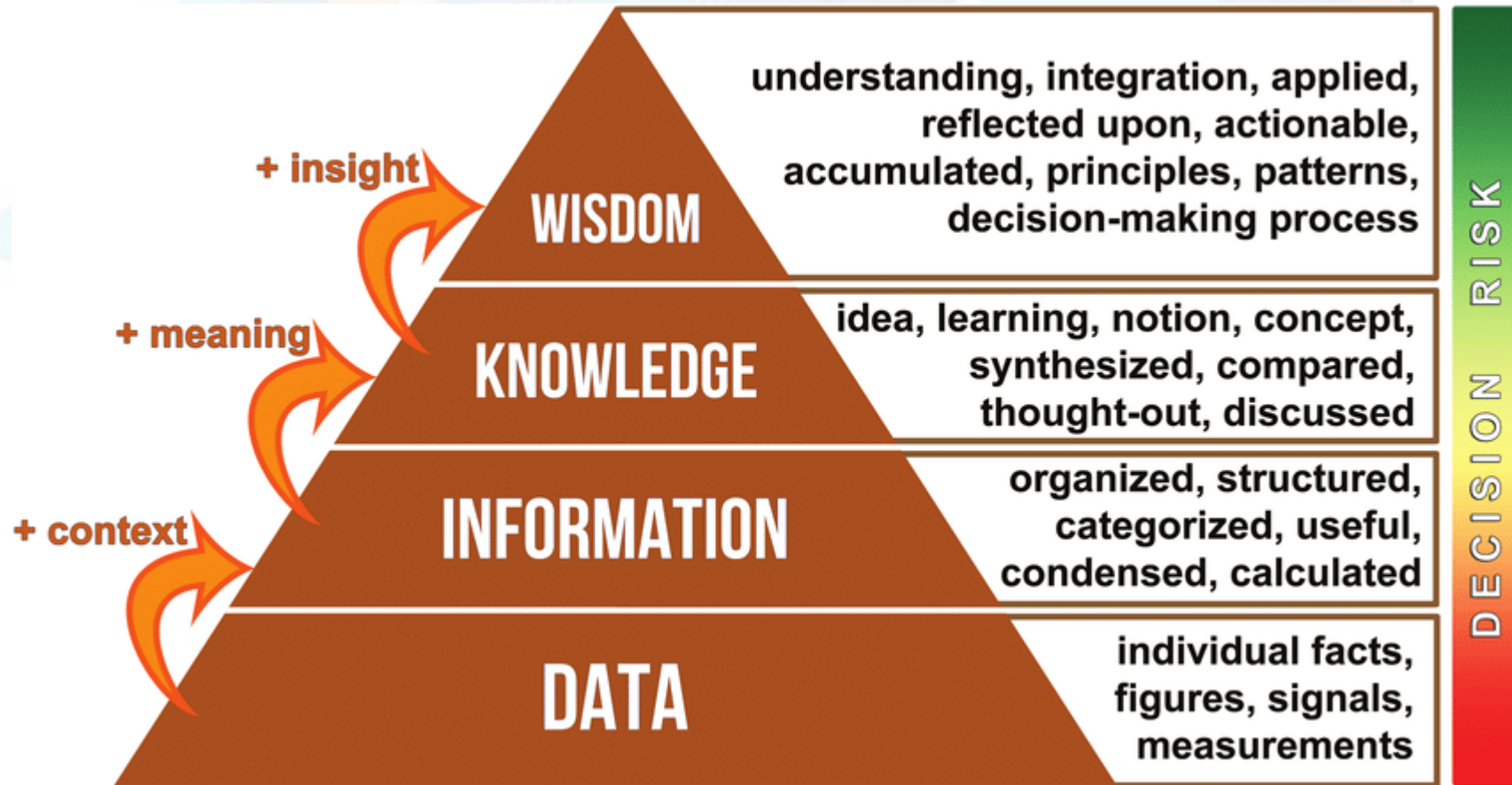
Knowledge

- 100 miles is quite a far distance.

Wisdom

- It is very difficult to walk 100 miles by any person, but vehicle transport is okay

Data ,Information ,Knowledge



Information system

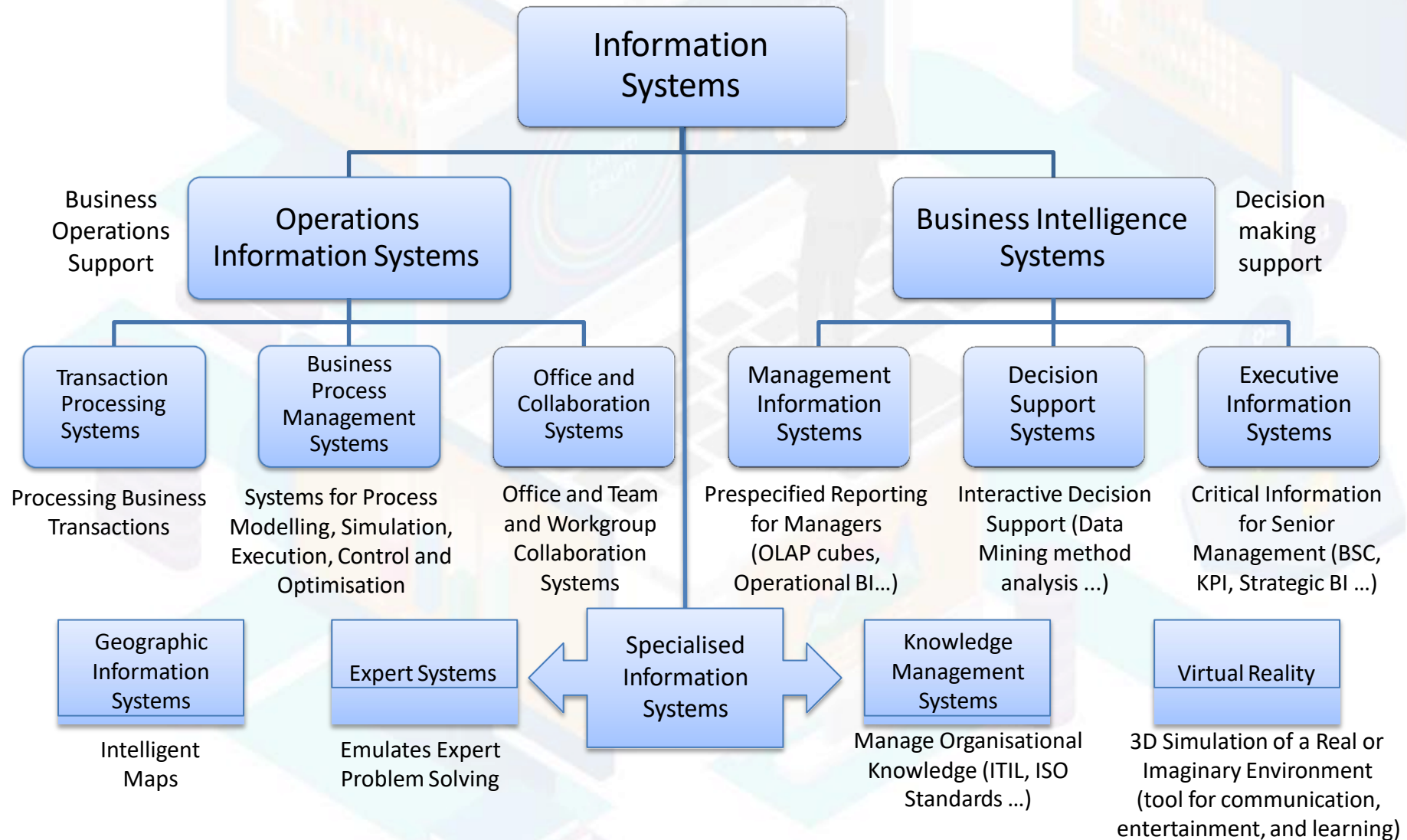
- › An information system collects, processes, stores, analyzes, and disseminates information for a specific purpose.
- › The purpose of information systems is...



Information system

- › Information system's functional area have several names, including
 - the MIS Department
 - the Information Systems (IS) Department
 - the Information Technology Department
 - and the Information Services Department
- › This functional area deals with the planning, development, management and use of information technology tools to help people perform all the tasks related to information processing and management.
- › Information technology is related to any computer-based tool that people use to work with information and information processing needs of an organization.

Types of Information Systems



Business Processes

| Accounting Business Processes | Finance Business Processes | Marketing Business Processes | Human Resource Business Process |
|---|--|--|---|
| <ul style="list-style-type: none">• Managing accounts payable• Managing accounts receivable• Reconciling bank accounts• Managing cash receipts• Managing invoice billings• Managing petty cash• Producing month-end close• Producing virtual close | <ul style="list-style-type: none">• Managing account collection• Managing bank loan applications• Producing business forecasts• Applying customer credit approval and credit terms• Producing property tax assessments• Managing stock transactions• Generating financial cashflow reports | <ul style="list-style-type: none">• Managing post-sale customer follow-up• Collecting sales taxes• Applying copyrights and trademarks• Using customer satisfaction surveys• Managing customer service• Handling customer complaints• Handling returned goods from customers• Producing sales leads• Entering sales orders• Training sales personnel | <ul style="list-style-type: none">• Applying disability policies• Managing employee hiring• Handling employee orientation• Managing files and records• Applying healthcare benefits• Managing pay and payroll• Producing performance appraisals and salary adjustments• Managing resignations and terminations• Applying training/tuition reimbursement• Managing travel and entertainment• Managing workplace rules and guidelines• Overseeing workplace safety |

Major Capabilities of Information Systems

Perform high-speed, high-volume numerical computations.

Provide fast, accurate communication and collaboration within and among organizations.

Store huge amounts of information in an easy-to-access, yet small space.

Allow quick and inexpensive access to vast amounts of information, worldwide.

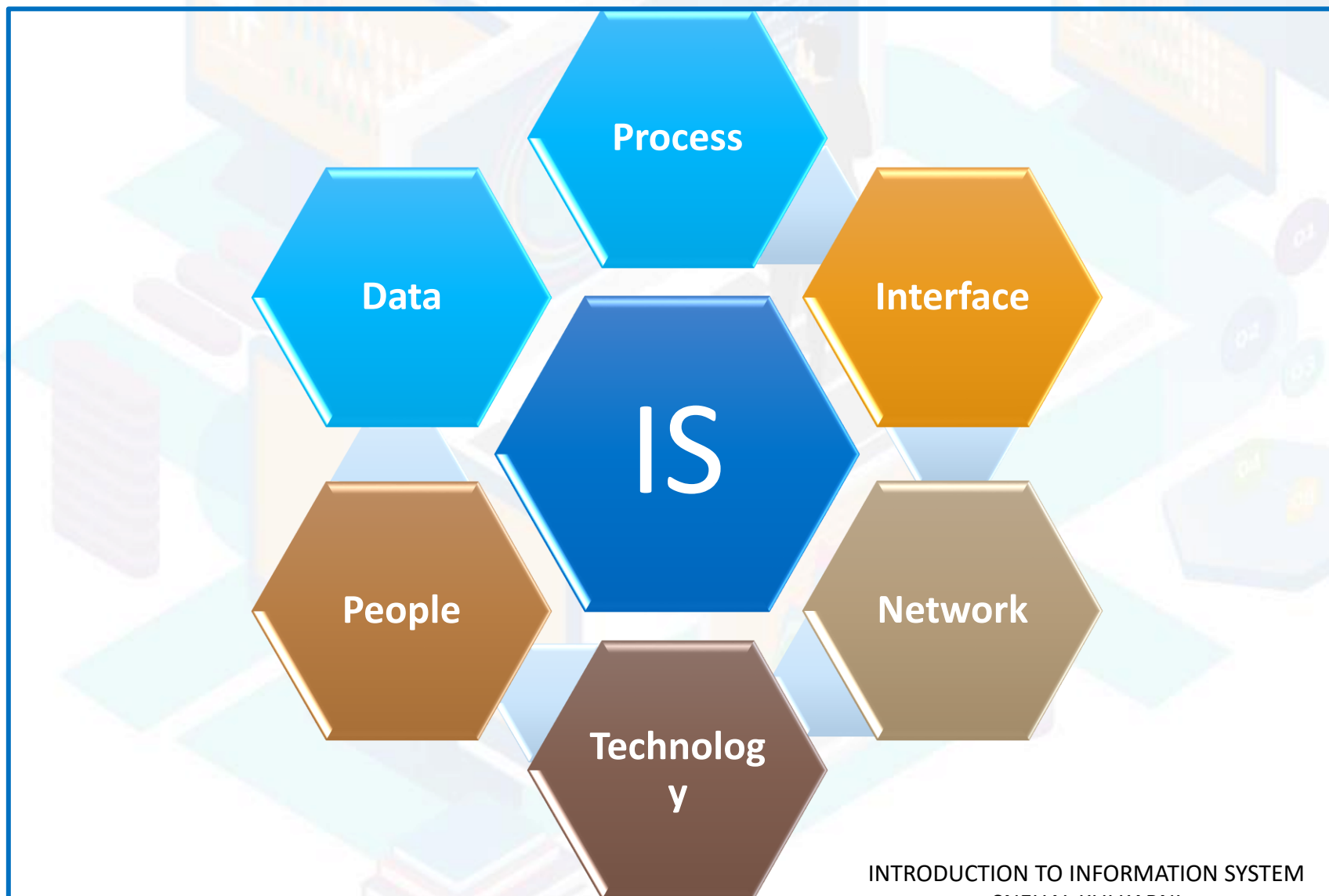
Interpret vast amounts of data quickly and efficiently.

Automate both semiautomatic business processes and manual tasks.

Computer-based information system (CBIS)

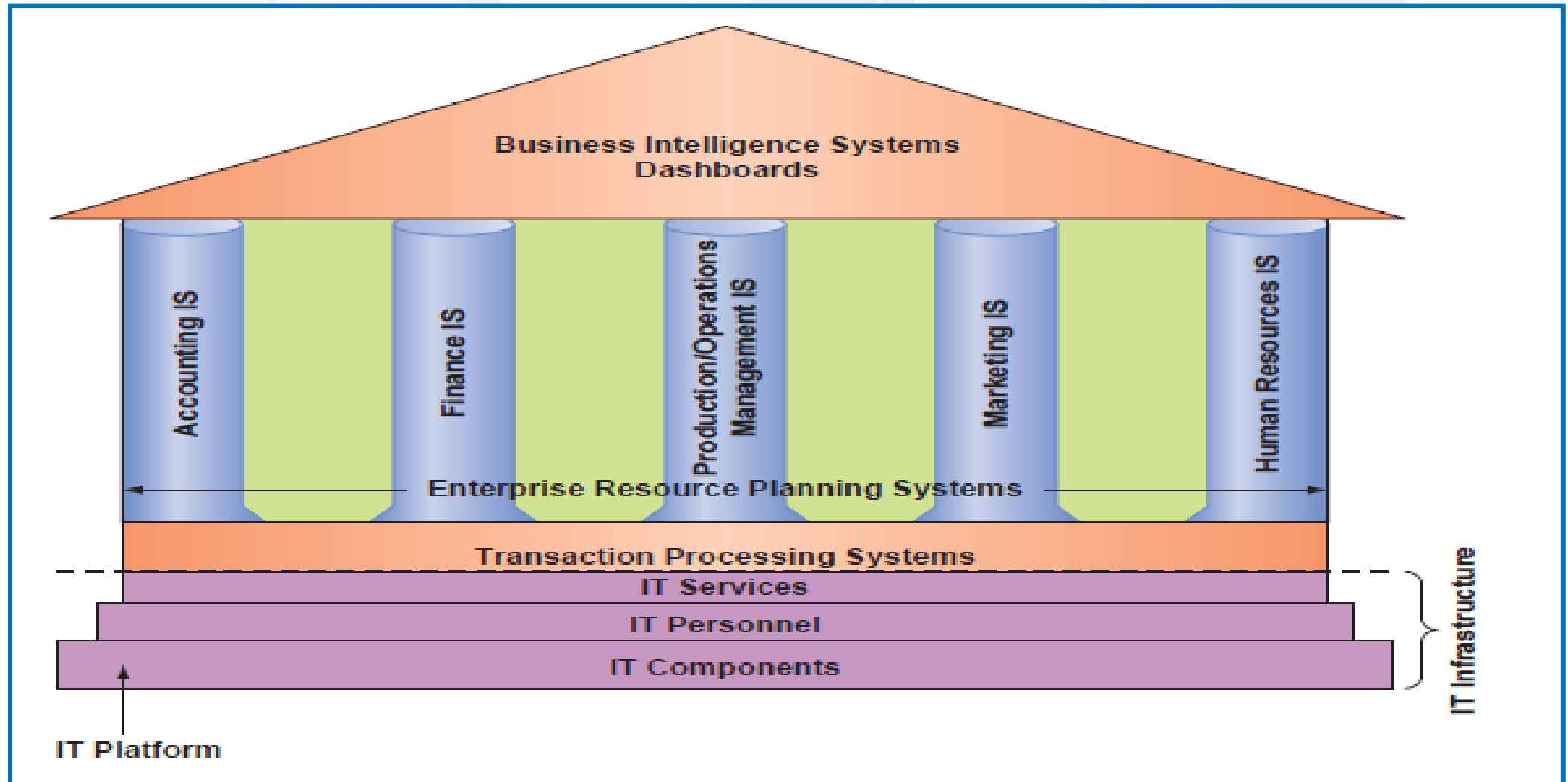
- › A computer-based information system (CBIS) is an information system that uses computer technology to perform some or all of its intended tasks.
- › For this reason the term “information system” is typically used synonymously with “computer-based information system.”

Components/Elements of Information Systems (IS)



Information technology inside your organization.

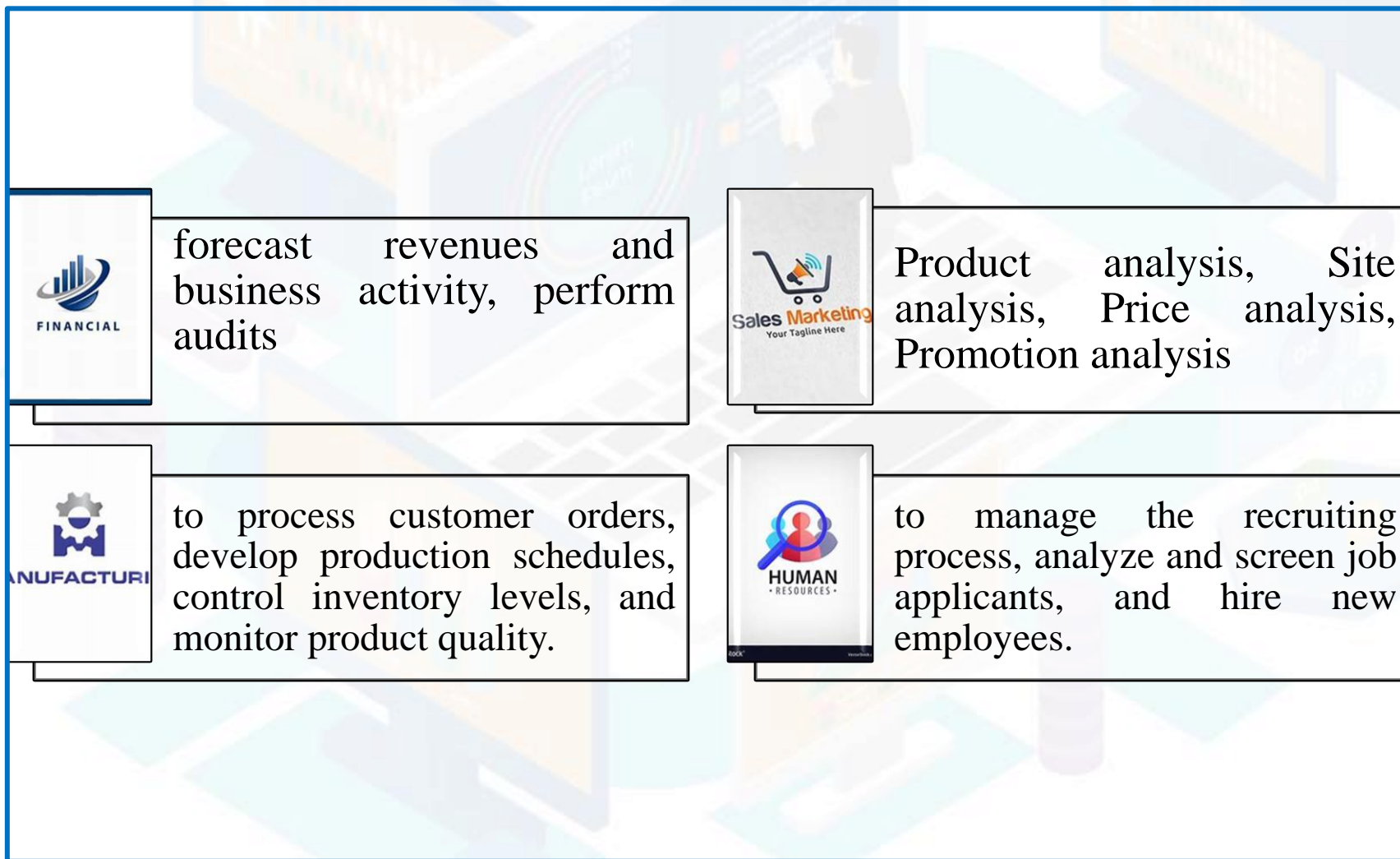
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Information technology inside the organization

- › Figure illustrates how IT components are integrated to form the wide variety of information systems found within an organization.
- › Starting at the bottom of the figure, you see that the IT components of hardware, software, networks (wireline and wireless), and databases form the **information technology platform**.
- › IT personnel use these components to develop information systems, oversee security and risk, and manage data.
- › These activities cumulatively are called **information technology services**.
- › The IT components plus IT services comprise the organization's **information technology infrastructure**.
- › At the top of the pyramid are the various organizational information systems.

IT systems in the various functional areas of an organization



Examples of information systems supporting the functional areas

| | | | | | |
|--|--|---|---------------------------------------|--|--|
| Profitability Planning | Financial Planning | Employment Planning, Outsourcing | Product Life Cycle Management | Sales Forecasting, Advertising Planning | STRATEGIC TACTICAL OPERATIONAL |
| Auditing, Budgeting | Investment Management | Benefits Administration, Performance Evaluation | Quality Control, Inventory Management | Customer Relations, Sales Force Automation | |
| Payroll, Accounts Payable, Accounts Receivable | Manage Cash, Manage Financial Transactions | Maintain Employee Records | Order Fulfillment, Order Processing | Set Pricing, Profile Customers | |
| ACCOUNTING | FINANCE | HUMAN RESOURCES | PRODUCTION/ OPERATIONS | MARKETING | |

Financial Planning and Budgeting

- Financial and economic forecasting
- Budgeting

Managing Financial Transactions

- Global stock exchanges
- Managing multiple currencies
- Expense management automation

Investment Management

- evaluate financial and economic reports provided by diverse institutions,
- To monitor, interpret, and analyze the huge amounts of online financial data

Control and Auditing

- Budgetary control
- Auditing.
- Financial ratio analysis

Recruitment.

- finding potential employees, evaluating them, and deciding which ones to hire
- testing and screening job applicants.

Human Resources Development

- Employee Evaluation.
- training and retraining

Human Resources Planning and Management

- Payroll and employees' records
- Benefits administration
- Employee relationship management.

In-House Logistics and Materials Management

- ordering, purchasing, inbound logistics (receiving), activities
- outbound logistics (shipping)

Inventory Management

- determines how much inventory an organization should maintain.
- when to order and how much to order

Quality Control

- provide information about the quality of incoming material and parts
- generate periodic reports containing information about quality

Planning Production and Operations

- material requirements planning
- ERP

Product Life Cycle Management

- PLM applies Web-based collaborative technologies to product development

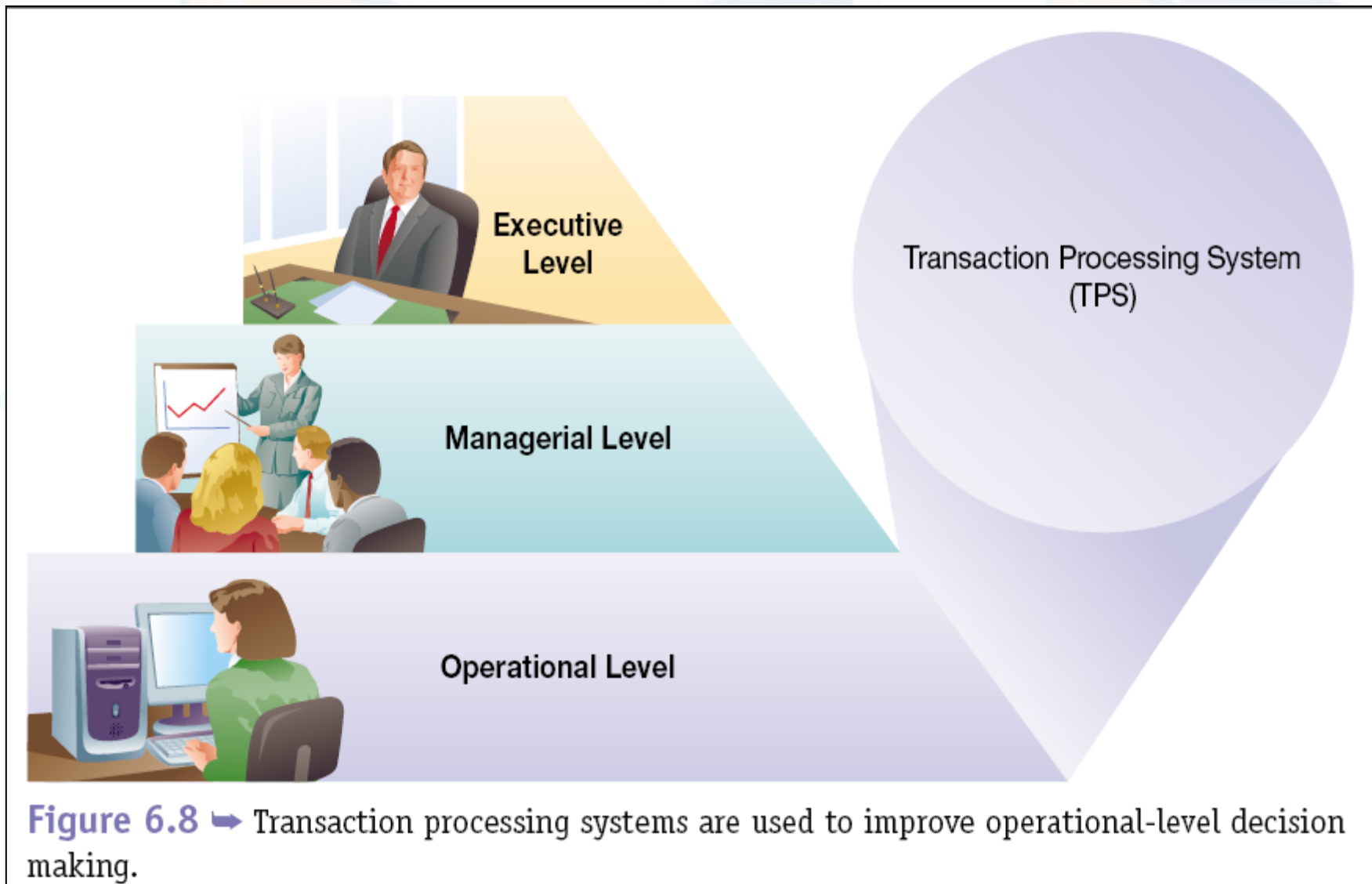
ERP and TPS

- › Two information systems support the entire organization:
 - enterprise resource planning systems (ERP) and transaction processing systems (TPS).
- › Enterprise resource planning (ERP) systems are designed to correct a lack of communication among the functional area ISs.
- › ERP systems were an important innovation because the various functional area ISs were often developed as standalone systems and did not communicate effectively (if at all) with one another.
- › ERP systems resolve this problem by tightly integrating the functional area ISs via a common database. In doing so, they enhance communications among the functional areas of an organization.

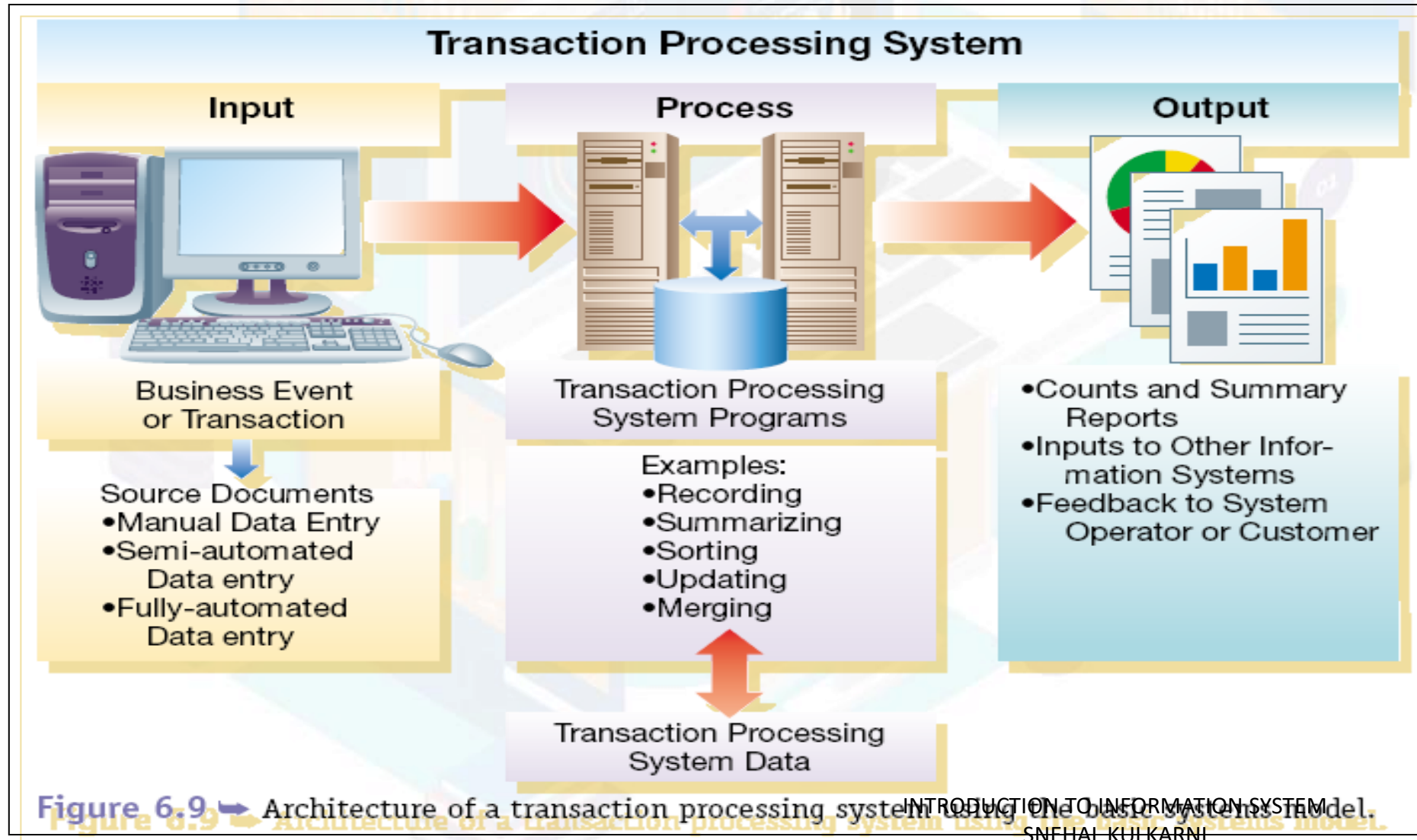
A transaction processing system (TPS)

- › A transaction processing system (TPS) supports the monitoring, collection, storage, and processing of data from the organization's basic business transactions, each of which generates data.

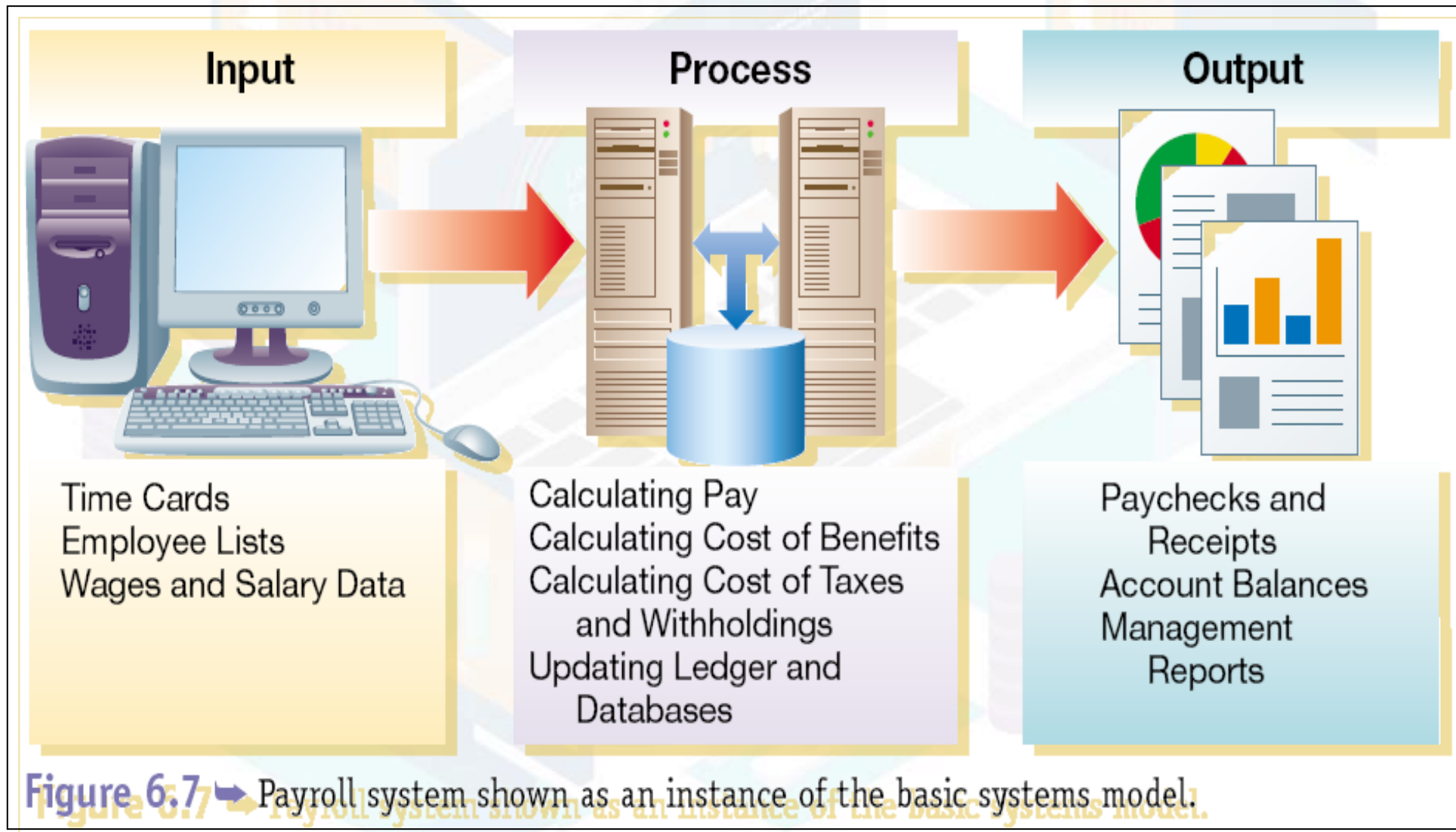
System Type: Transaction Processing Systems



System Architecture: Transaction Processing System



System Example: Payroll System (TPS)



Main functions of TPS:

Main functions of TPS are given as ,

- Input functions: Securing and inputting the data of the transactions that have taken place
- Output functions: Producing the report and record of the input data to be used for future references and validating the transaction
- Storage functions: Storing the data from both input and output operations and ensuring the availability of data for operations like information access, retrieval, sorting and updating.
- Processing functions: Computing, calculating, sorting, and defining the input data to get the desired results.

Characteristics of TPS

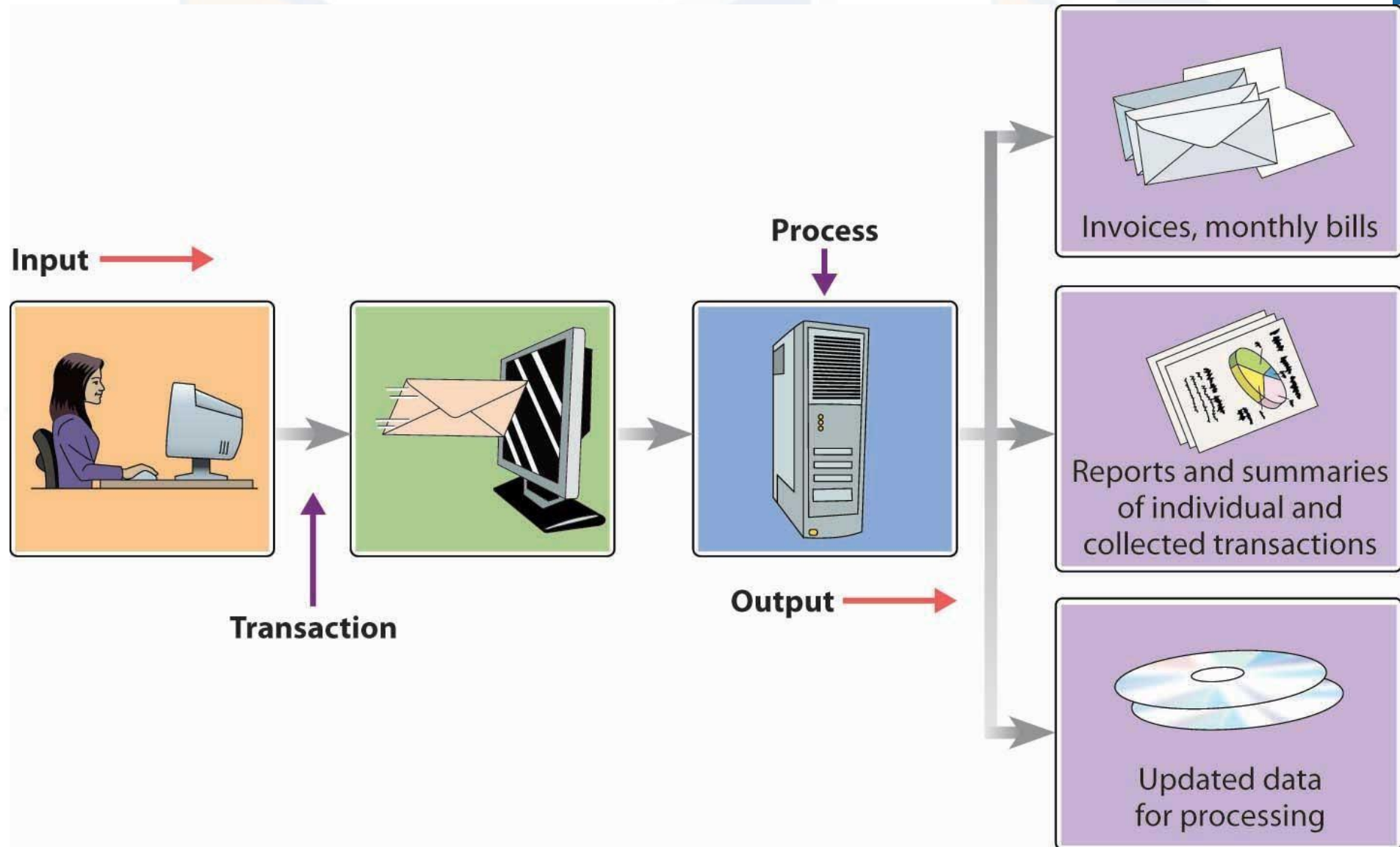
- › Records internal and external transactions that take place in a company
- › Is used mostly by lower-level managers to make operational decisions
- › Stores data that are frequently accessed by other systems
- › Is ideal for routine, repetitive tasks
- › Records transactions in batch mode or on-line
- › Requires six steps to process a transaction—data entry, validation, data processing, storage, output generation, and query support

TRANSACTION PROCESSING SYSTEM

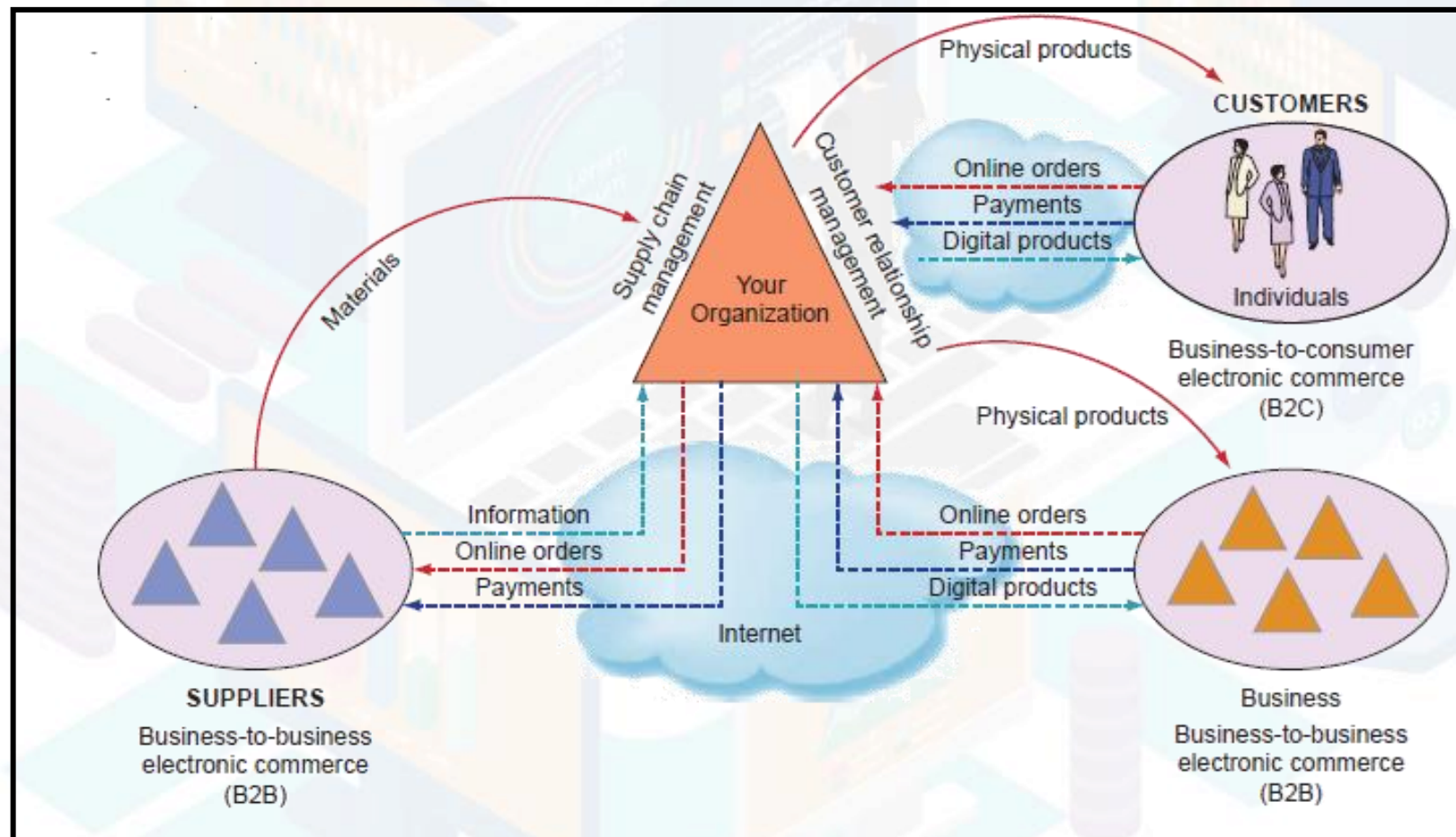
□ Examples:

- Sales order entry
- Employee Record Keeping & Payroll
- Accounting
- Production & Operation Systems
- Shipping
- Billing
- PoS (Point of Sale)
- Train Tickets
- Check In (Airport, Hotel, Hospital)
- Customer service
- Control Systems

A transaction in context of information system usually means CAPTURE, RECORD, PROCESS, STORE, ORGANIZE, QUERY, RETRIEVE, DISTRIBUTE information.



Information systems that function among multiple organizations(inter organizational)



Electronic commerce

- › Electronic commerce (e-commerce) systems are another type of interorganizational information system.
- › These systems enable organizations to conduct transactions, called business-to-business (B2B) electronic commerce, and customers to conduct transactions with businesses, called business-to-consumer (B2C) electronic commerce

Support for Organizational Employees

Clerical workers

- who support managers at all levels of the organization, include bookkeepers, secretaries, electronic file clerks, and insurance claim processors

Lower-level managers

- handle the day-to-day operations of the organization, making routine decisions such as assigning tasks to employees and placing purchase orders

Middle managers

- make tactical decisions, which deal with activities such as short-term planning, organizing, and control

Knowledge workers

- All knowledge workers are experts in a particular subject area. They create information and knowledge, which they integrate into the business.

executives

- make decisions that deal with situations that can significantly change the manner in which business is done.

Support for Organizational Employees contd..

- › Office automation systems (OASs) typically support the clerical staff, lower and middle managers, and knowledge workers.
 - These employees use OASs to develop documents (word Processing and desktop publishing software), schedule resources (electronic calendars), and communicate (e-mail, voice mail, videoconferencing).
- › Functional area information systems summarize data and prepare reports, primarily for middle managers, but sometimes for lower-level managers as well.

Support for Organizational Employees contd..

- › Business intelligence (BI) systems provide computer-based support for complex, non routine decisions, primarily for middle managers and knowledge workers.
 - These systems are typically used with a data warehouse, and they enable users to perform their own data analysis.
- › Expert systems (ESs) attempt to duplicate the work of human experts by applying reasoning capabilities, knowledge, and expertise within a specific domain. For example, navigation systems use rules to select routes,
 - Significantly, expert systems can operate as standalone systems or be embedded in other applications.

Levels of the Organization Explained

Executive Level

Strategic planning and responses to **strategic issues** occur here. Executive **decisions** are usually **unstructured** and are made using information **consolidated internal** and **external** information



Managerial Level

Monitoring and **controlling** of operational activities and **executive information support** occur here. Managerial **decisions** are usually **semi structured** and are made using **procedures** and **ad hoc** tools

Operational Level

Day-to-day business processes and interactions with customers occur here. Operational **decisions** are usually **structured** and are made using established **policies and procedures**



Who, What, Why: Organizational Level



Who, What, Why: Managerial Level



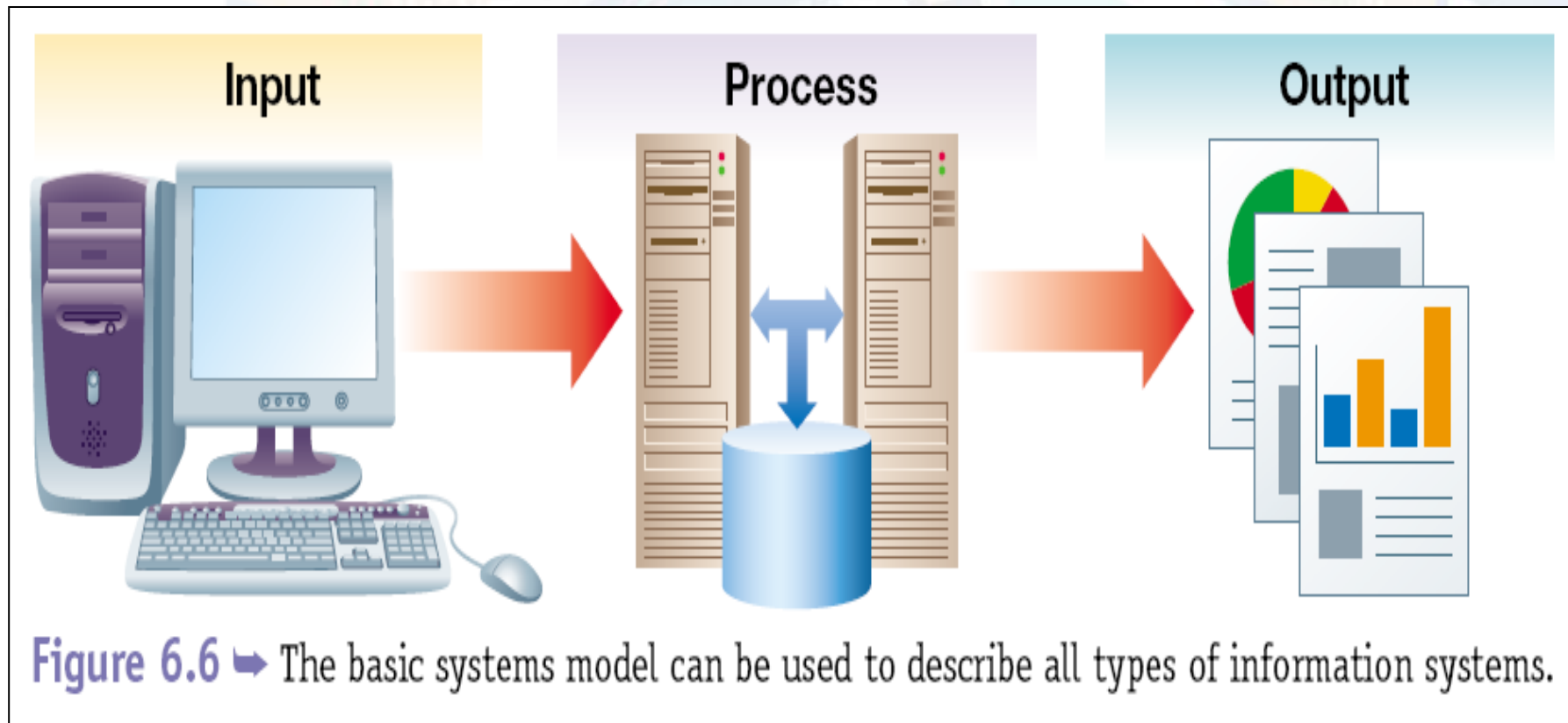
Figure 6.3 ➔ The managerial level of an organization uses information systems to improve effectiveness by automating the monitoring and control of organizational activities.

Who, What, Why: Executive Level



Figure 6.4 ➔ The executive level of an organization uses information systems to improve strategy and planning by providing summaries of past data and projections of the future!

Basic Systems Model

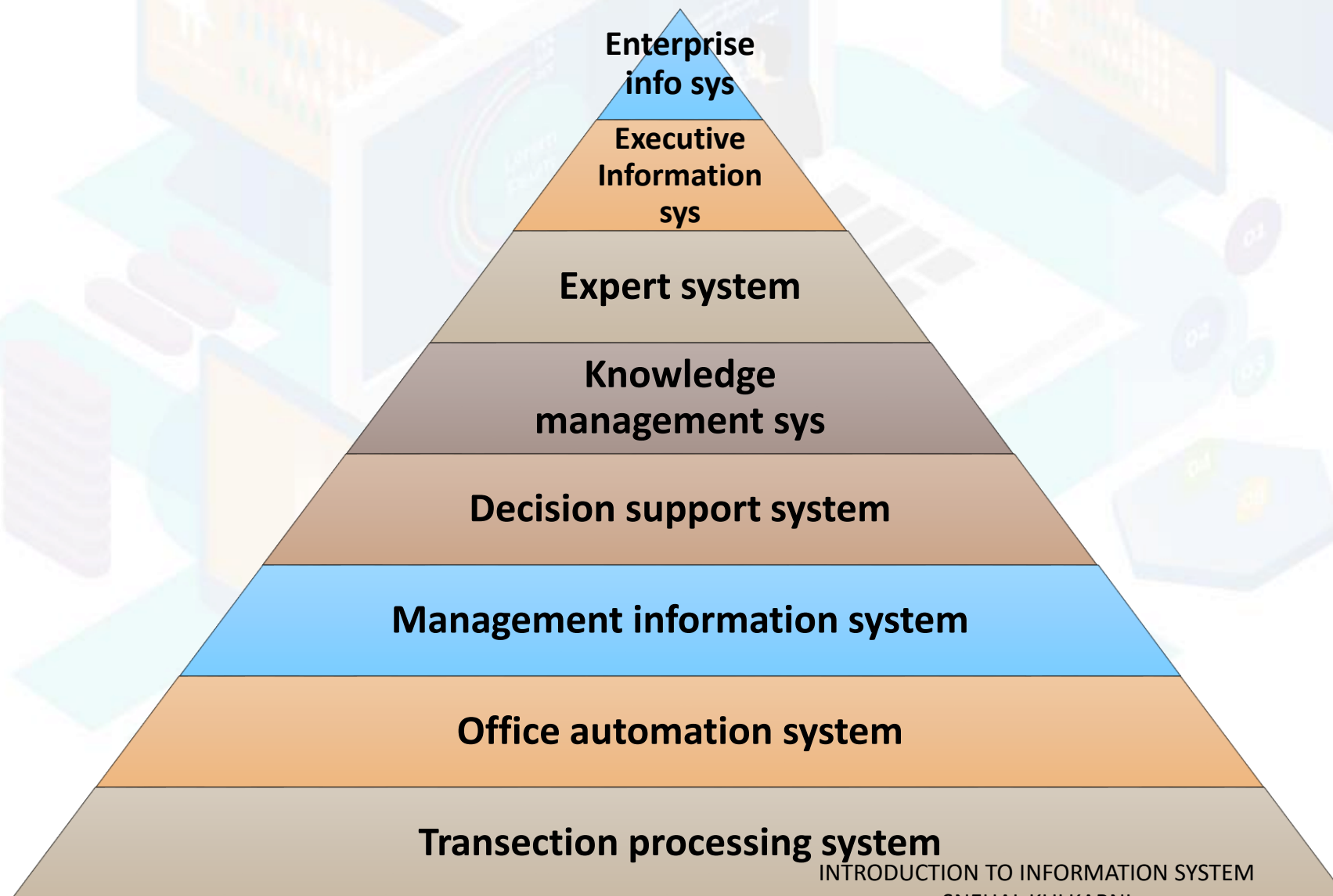


Types of organizational Information systems

Types of Organizational Information Systems

| Type of System | Function | Example |
|--------------------------------|--|--|
| Functional area IS | Supports the activities within specific functional area. | System for processing payroll |
| Transaction processing system | Processes transaction data from business events. | Walmart checkout point-of-sale terminal |
| Enterprise resource planning | Integrates all functional areas of the organization. | Oracle, SAP system |
| Office automation system | Supports daily work activities of individuals and groups. | Microsoft® Office |
| Management information system | Produces reports summarized from transaction data, usually in one functional area. | Report on total sales for each customer |
| Decision support system | Provides access to data and analysis tools. | “What-If” analysis of changes in budget |
| Expert system | Mimics human expert in a particular area and makes decisions. | Credit card approval analysis |
| Executive dashboard | Presents structured, summarized information about aspects of business important to executives. | Status of sales by product |
| Supply chain management system | Manages flows of products, services, and information among organizations. | Walmart Retail Link system connecting suppliers to Walmart |
| Electronic commerce system | Enables transactions among organizations and between organizations and customers. | www.dell.com |

TYPES OF INFORMATION SYSTEMS



How Does IT Impact Organizations?

- › IT Reduces the Number of Middle Managers
- › IT Changes the Manager's Job
- › Will IT Eliminate Jobs?
- › IT Impacts Employees at Work
- › IT Impacts Employees' Health and Safety.
- › IT Provides Opportunities for People with Disabilities.

NEED FOR INFORMATION

- ☐ Top managers need information for planning, setting objectives, and making major strategic decisions.
- ☐ Middle managers need information that helps them allocate resources and oversee the activities under their control.
- ☐ First-line managers require information that helps them supervise employees, oversee daily operations, and coordinate activities.

MANAGEMENT

Basic Functions of Management

Planning

Organizing

Staffing

Directing

Controlling

Organization Hierarchy

Strategic

Operational

Tactical or Managerial

Functional Areas

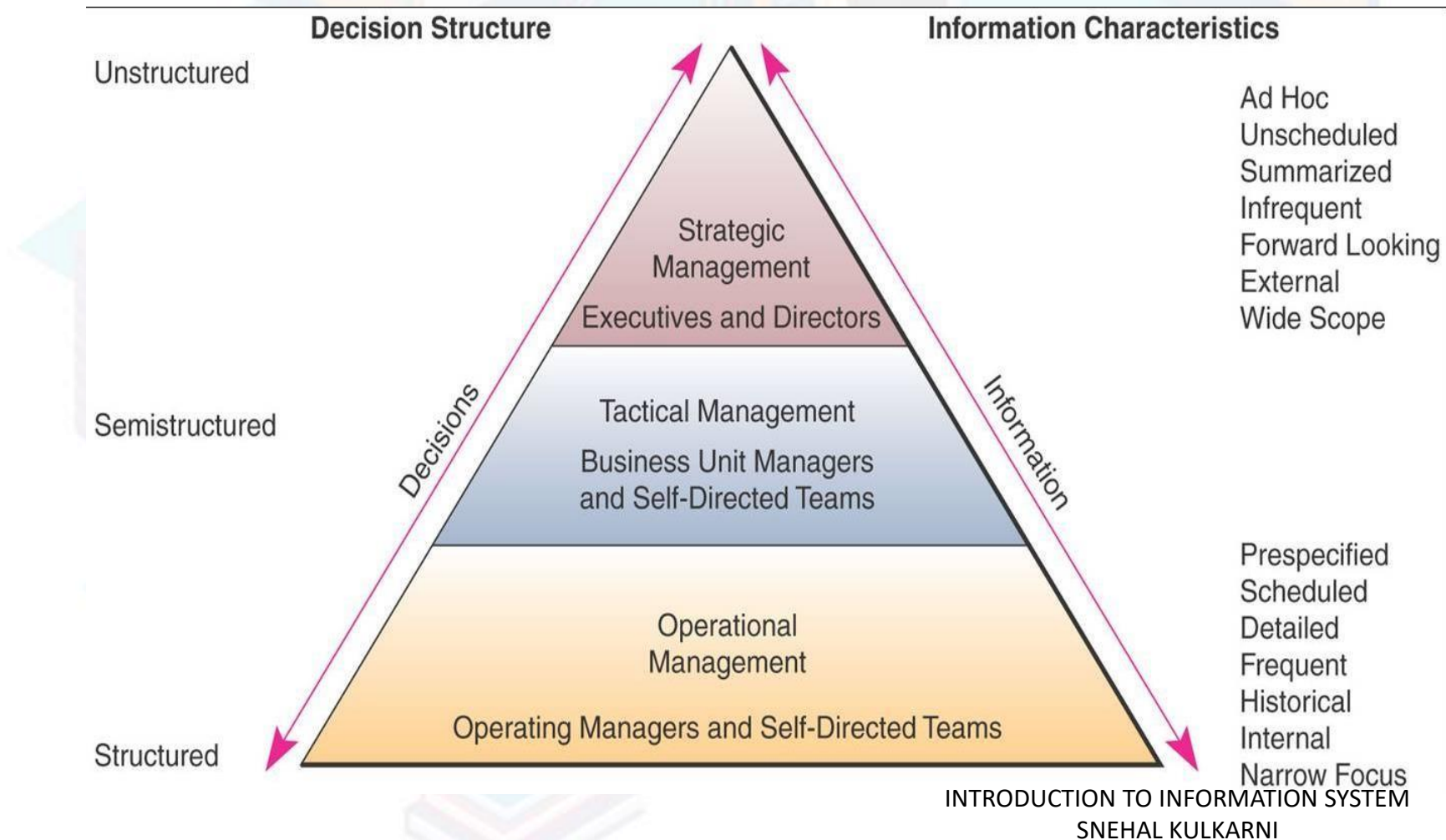
Sales & Marketing

Finance

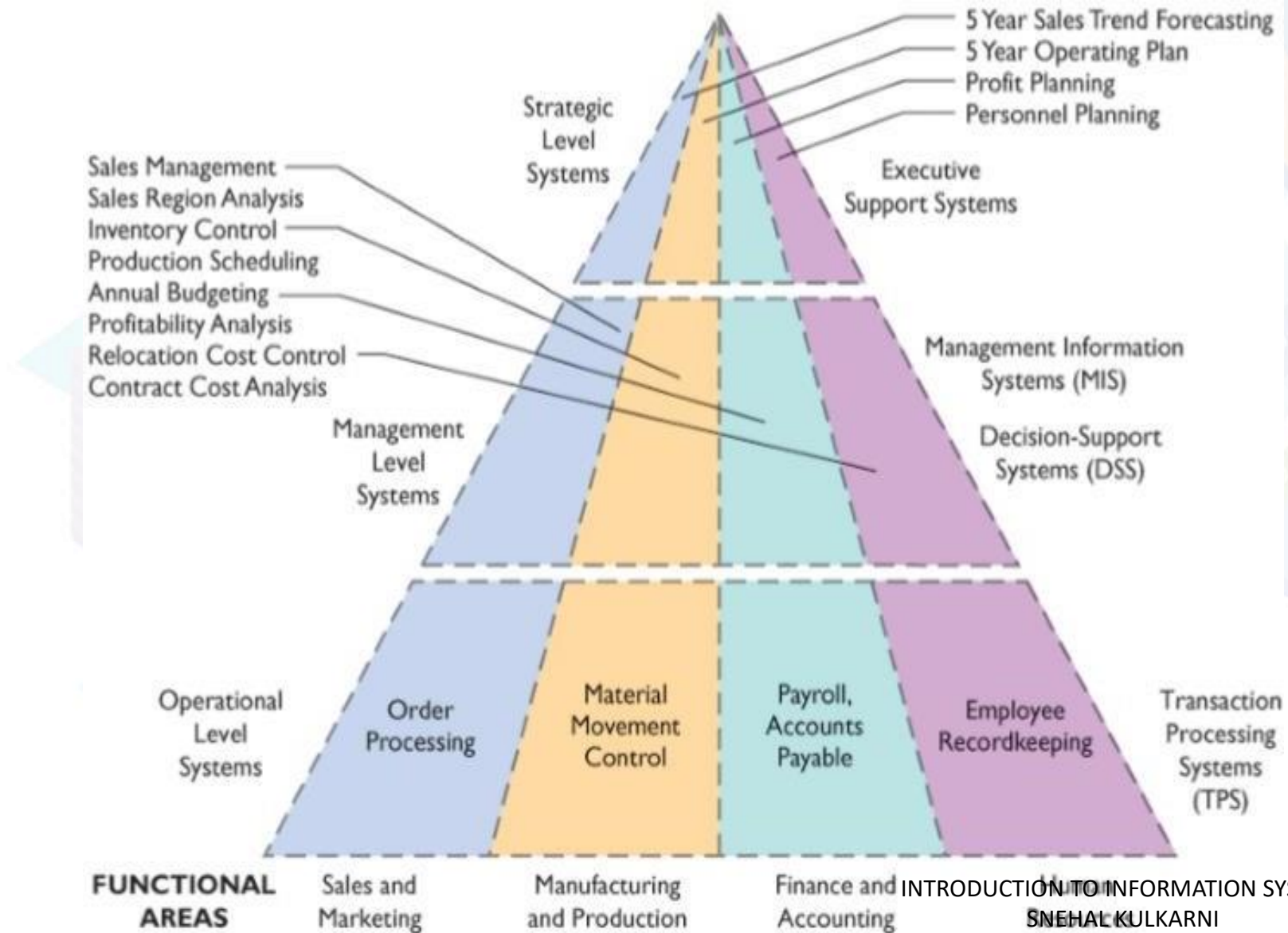
HR

Production

NEED FOR INFORMATION DIFFERS AT DIFFERENT LEVELS OF MANAGEMENT HIERARCHY



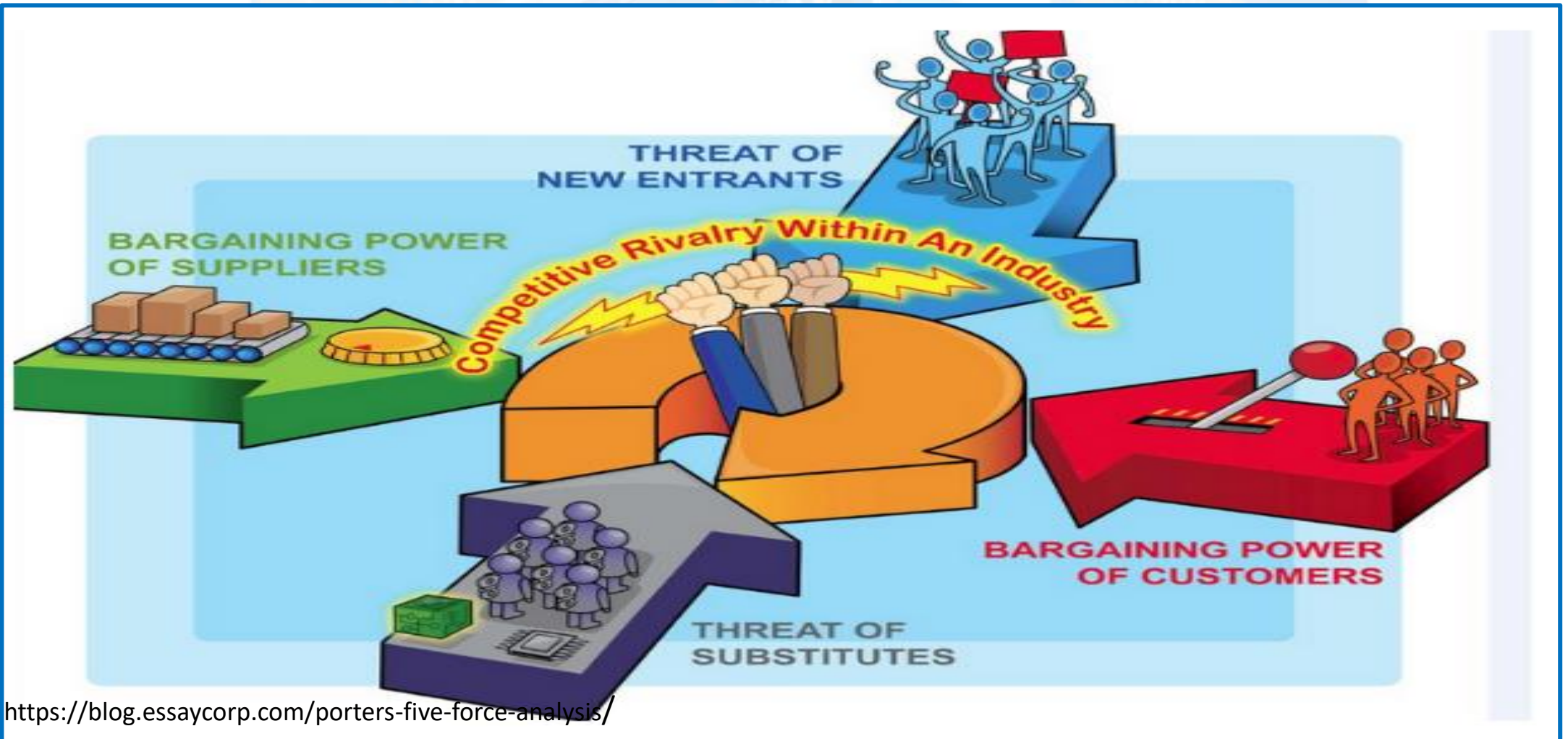
EXAMPLES



How do Information Systems enable organizations to achieve competitive advantage?

- › Competitive advantage refers to any assets that provide an organization with an edge against its competitors in some measure such as cost, quality, or speed. A competitive advantage helps an organization to control a market and to accrue larger-than-average profits. Significantly, both strategy and competitive advantage take many forms.
- › information technologies simply offer tools that can enhance an organization's success through its traditional sources of competitive advantage, such as low cost, excellent customer service, and superior supply chain management.
- › The best-known framework for analyzing competitiveness is *Michael Porter's competitive forces model (Porter, 1985)*. Companies use Porter's model to develop strategies to increase their competitive edge. Porter's model also demonstrates how IT can make a company more competitive

Porters 5 Forces Model



Porters 5 Forces Model

The threat of entry of new competitors

- The threat that new competitors will enter your market is high when entry is easy and low when there are significant barriers to entry.

The bargaining power of suppliers

- Supplier power is high when buyers have few choices
- from whom to buy and low when buyers have many choices

The bargaining power of Customers

- Buyer power is high when buyers have many
- choices from whom to buy and low when buyers have few choices

The threat of substitute product

- If there are many alternatives to an organization's products or services, then the threat of substitutes is high.

The rivalry among existing firms in the industry

- The threat from rivalry is high when there is intense competition among many firms in an industry. The threat is low when the competition is among fewer firms and is not as intense.

In this example, Argento, an existing apparel company, is entering the athletic shoes and clothing market:

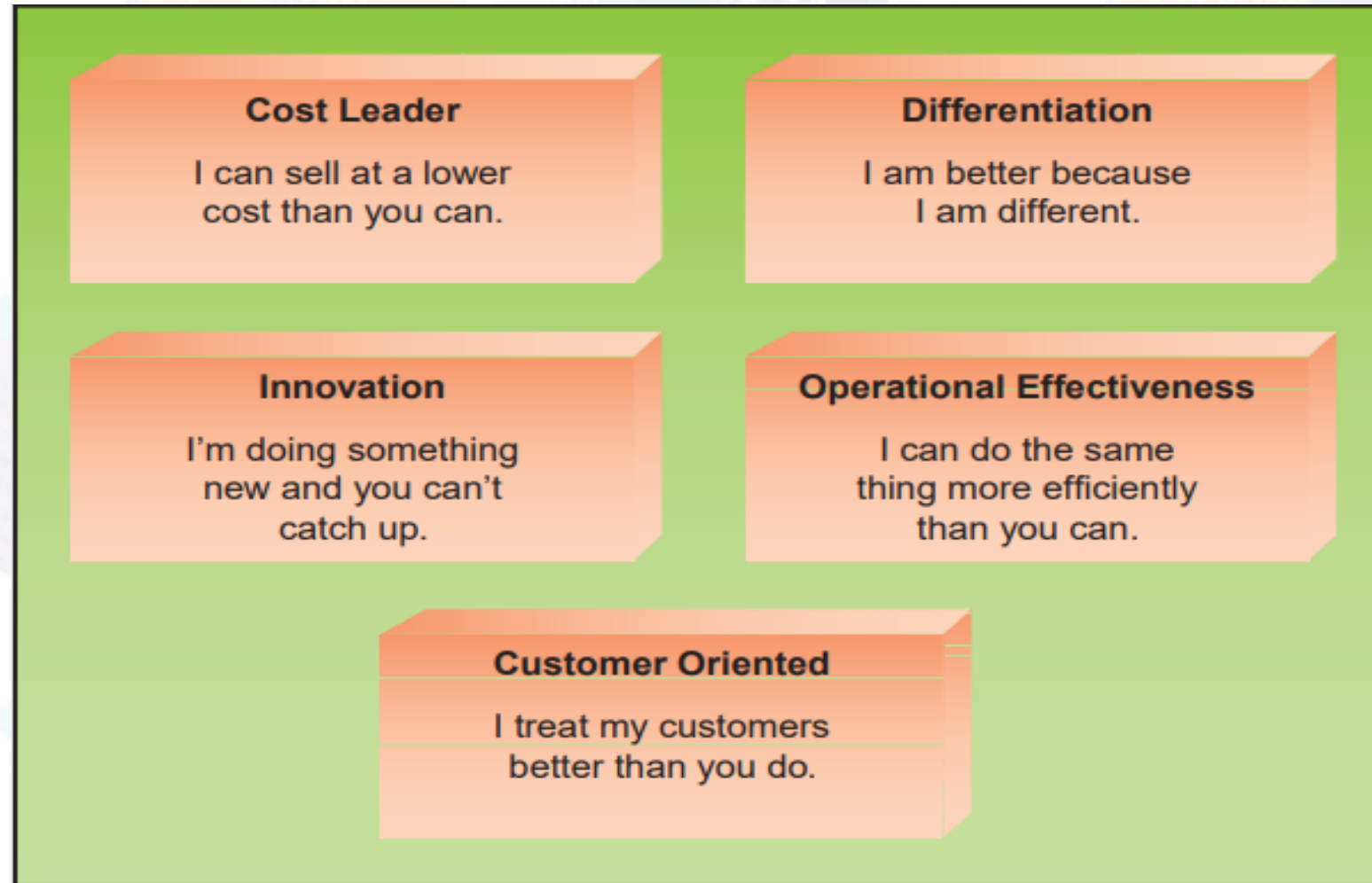
- **Competitive rivalry:** *Several large, established companies already occupy the athletic apparel industry. They have big budgets and lots of resources to maintain their share of the market. Argento's products are not yet patented, so these companies or others could potentially copy them. Competitive rivalry for Argento is high.*
- **Threat of new entrants:** *Entering the athletic apparel market requires a large investment for production, advertising and branding. However, existing large apparel companies could decide to enter the athletic market. The threat of new entrants is medium to low.*
- **Threat of substitute products:** *While companies could copy Argento's unpatented products, the demand for athletic wear high and continuing to grow. The threat of substitute products is low.*
- **Bargaining power of buyers:** *Argento's buyers include both end-users and wholesale. Wholesale customers have enough bargaining power to substitute Argento's products with those of lower-priced competitors. End-users, however, are loyal to Argento's brand. The collective bargaining power of buyers is medium.*
- **Bargaining power of suppliers:** *The athletic apparel industry has a large and varied supplier base. Further, Argento has many options because it manufactures its products using different companies in multiple countries. The bargaining power of suppliers is low.*

Based on this analysis, Argento has a good chance of being profitable in the athletic apparel industry and now knows it needs to focus its money and efforts on patenting and marketing to more end-users.

What are the Information System strategies to deal with the Competitive forces?

- › There are four generic strategies: •
- › Low-cost leadership •
- › Product differentiation •
- › Focus on market niche •
- › Strengthening customer and supplier intimacy

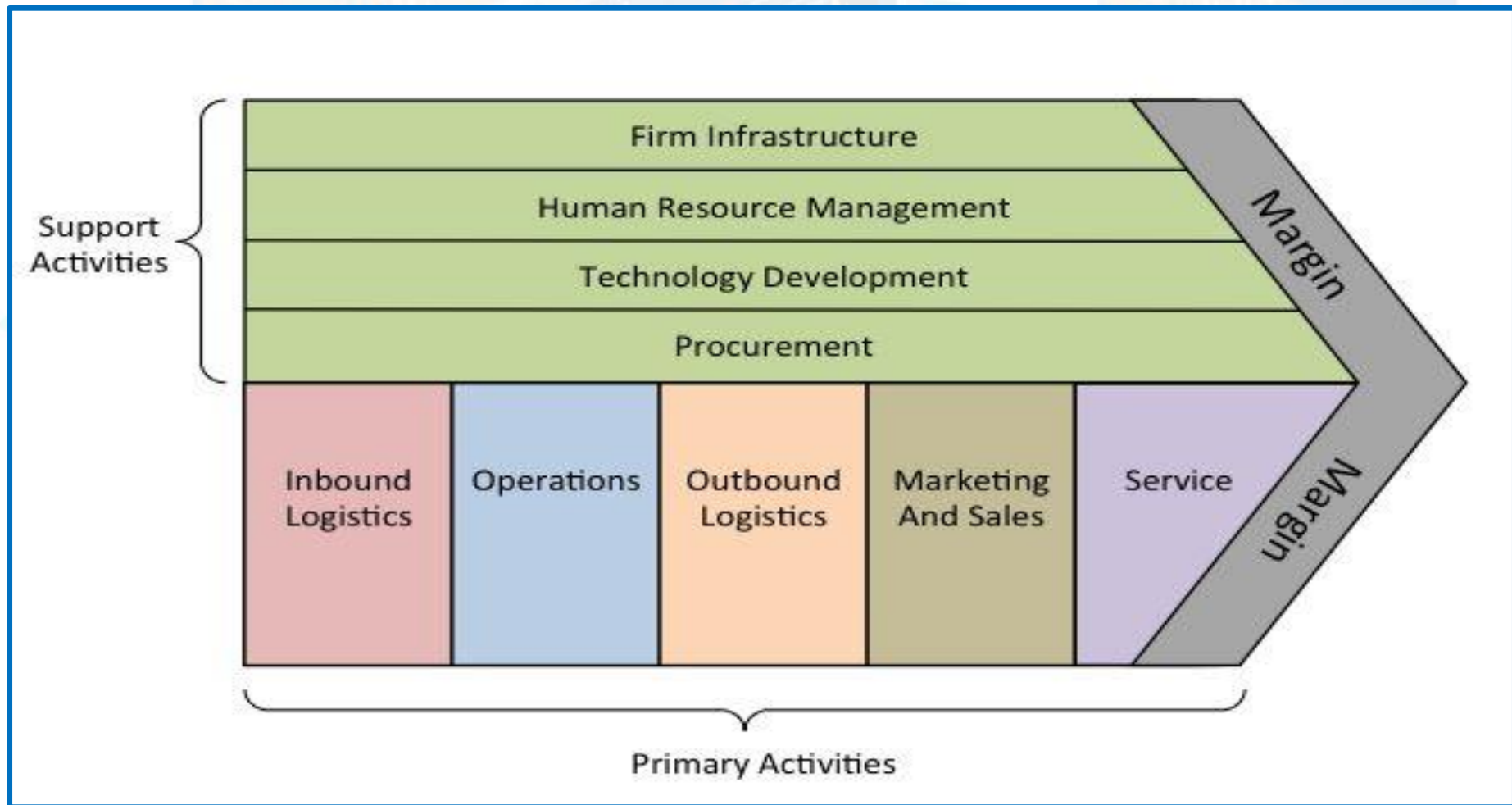
Strategies for Competitive Advantage



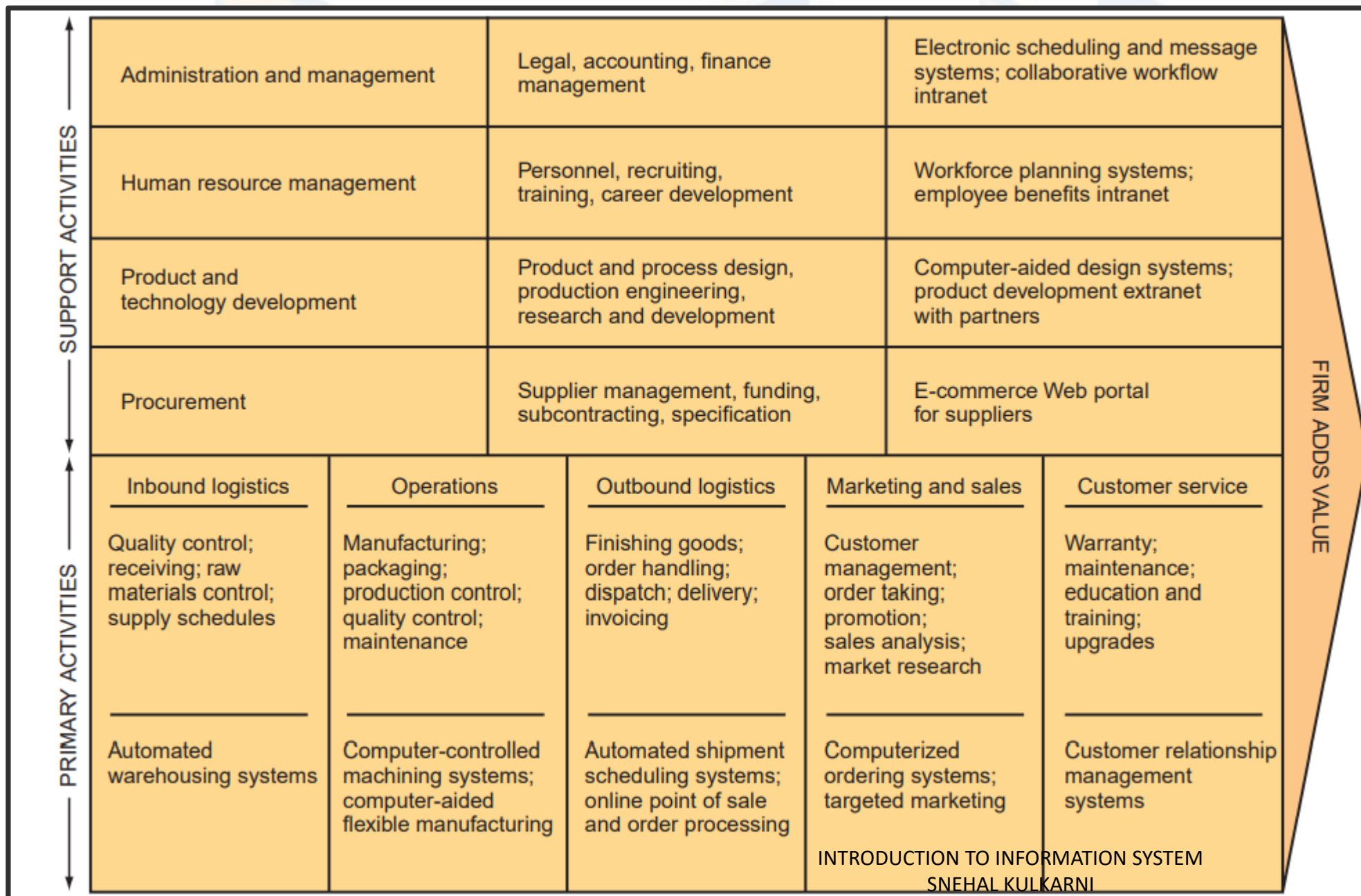
Michael Porter' Value Chain Model

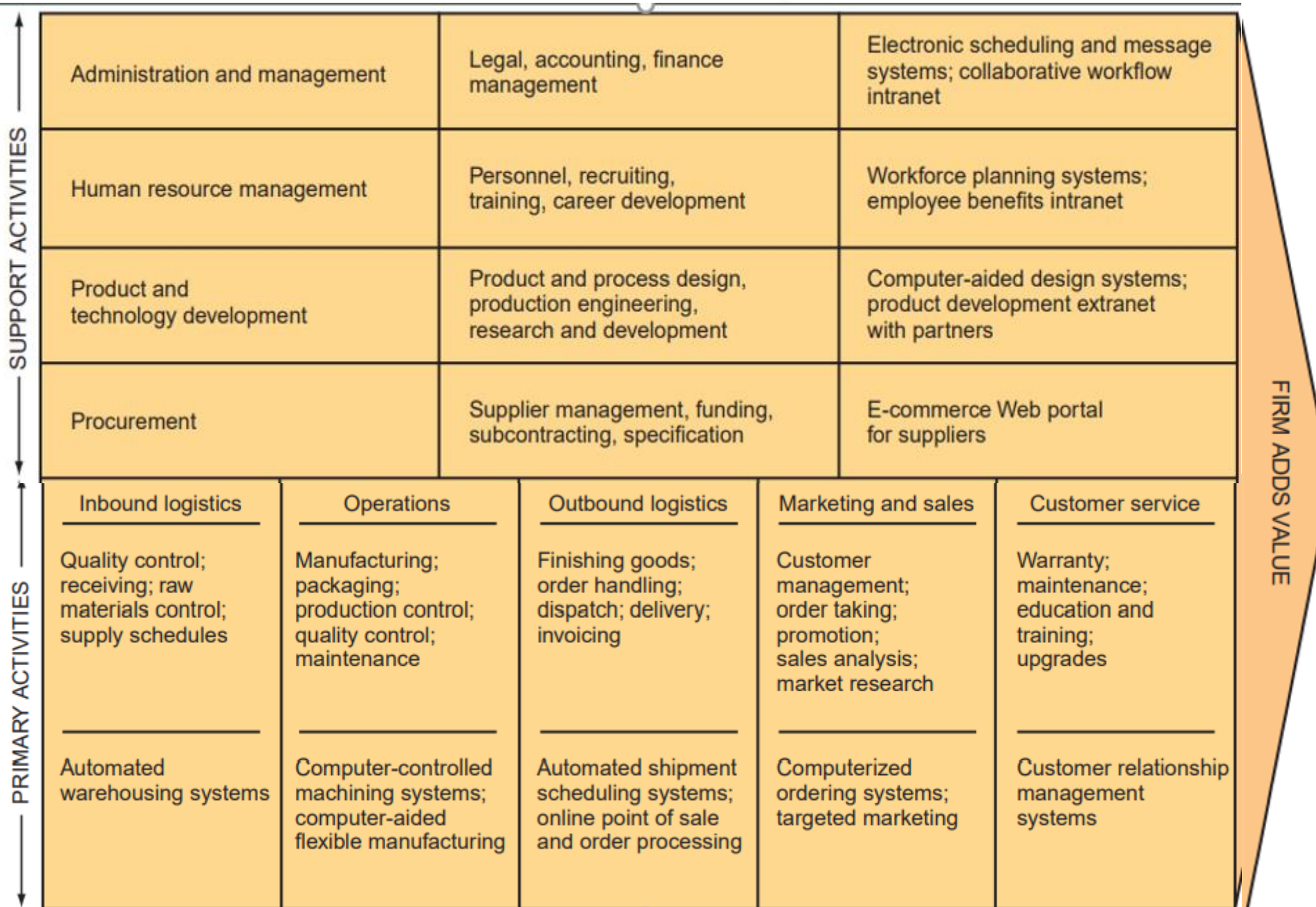
- › Organizations use the Porter competitive forces model to design general strategies.
- › *To identify specific activities where they can use competitive strategies for greatest impact, they use his value chain model (1985).*
- › A value chain is a sequence of activities through which the organization's inputs, whatever they are, are transformed into more valuable outputs, whatever they are.
- › The value chain model identifies points where an organization can use information technology to achieve competitive advantage

Michael Porter' Value Chain Model



Porter's Value Chain





Porter's Value Chain

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- › In a manufacturing company, primary activities involve purchasing materials, processing the materials into products, and delivering the products to customers.
- › As work progresses in this sequence, value is added to the product in each activity. Specifically, the following steps occur:
 - The incoming materials are processed (in receiving, storage, and so on) in activities called inbound logistics.
 - The materials are used in operations, where value is added by turning raw materials into products.
 - These products are prepared for delivery (packaging, storing, and shipping) in the outbound logistics activities.
 - Marketing and sales sell the products to customers, increasing product value by creating demand for the company's products.
 - Finally, the company performs after-sales service for the customer, such as warranty service or upgrade notification, adding further value.

University Questions

- › What is information system ? Explain the necessary element with neat diagram.(Dec 19)
- › Discuss competitive advantage achieved in information system.(Dec 19)