Eduvos
Your Education. Your Future.

Introduction to Information Systems

ITISA1

Eduvos
Your Education. Your Future.

Disclaimer

Please note that the content made available on myLMS may deviate slightly from what is covered in lecturer-led sessions. However, the material on myLMS, along with prescribed textbooks and any other designated learning resources, constitutes the compulsory content students are expected to consult and prepare for assessments.

What will be covered in the rest of today's session?

What will be covered in the lecture-led session:

- Enterprise Systems
- Transaction Processing Systems
- TPSs Example

Why Enterprise Systems ?

- Perform routine business processes and maintain records about them
- Support a wide range of business activities: supply chain management, customer relationship management, and product lifecycle management

Transaction Processing Systems

Transaction processing systems (TPSs)

- Capture and process detailed data to update records about fundamental business operations
  - Order entry, inventory control, payroll, accounts payable, accounts receivable, general ledger, etc.
- Provide valuable input
  - Management information systems
  - Decision support systems
  - Knowledge management systems

Traditional Transaction Processing Methods and Objectives

Batch processing system

- Business transactions are accumulated over a period and prepared for processing as a single unit or batch
  - Essential characteristic: delay between event and processing of related transaction to update records

Online transaction processing (OLTP)

- Each transaction is processed immediately
  - Data in an online system reflects current status
  - Many find OLTP enables faster, more efficient service

Traditional Transaction Processing Methods and Objectives

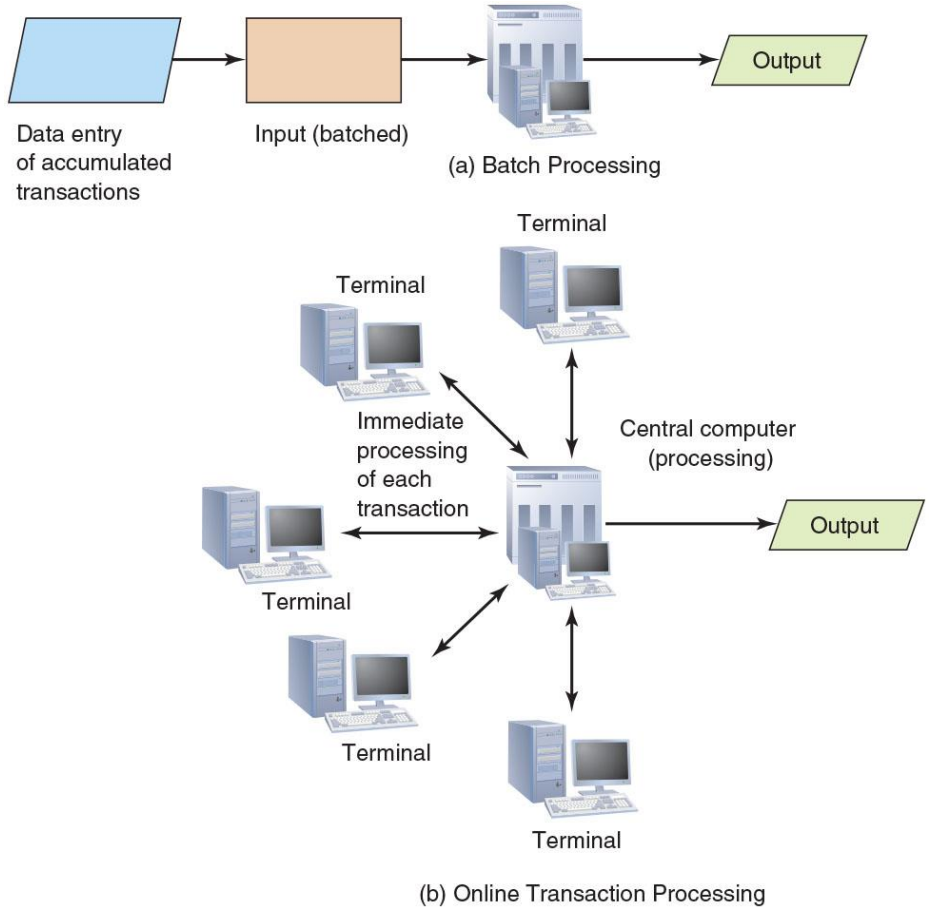


FIGURE 10.2
Batch versus online transaction processing (a) Batch processing inputs and processes data in groups. (b) In online processing, transactions are processed as they occur.

Traditional Transaction Processing Methods and Objectives

Organizations expect TPSs to:

- Capture, process, and update databases
- Ensure data is processed accurately and completely
- Avoid processing fraudulent transactions
- Produce timely user responses and reports
- Reduce clerical and other labor requirements
- Help improve customer service
- Achieve competitive advantage

TPSs Examples

TPS systems

- Order processing systems
- Accounting systems
- Purchasing systems
- Stock Exchanges – Add more examples…

Transaction Processing Activities

Transaction processing cycle

- Data collection
- Data editing
- Data correction
- Data processing
- Data storage
- Document production

Data Collection

- Capturing and gathering all data necessary to complete the processing of transactions
  - Data collection can be manual or automated via special input devices
- Source data automation
- Capturing data at its source and recording it accurately in a timely fashion with minimal manual effort and in an electronic or digital form so it can be directly entered into the computer

Data Collection

Cloud-based POS systems provide a range of capabilities

- Advanced integration with digital loyalty programs
- Various accounting tools
- Ability to generate gift cards and coupons

Data Editing

Data editing

- Checking data for validity and completeness to detect any problems

Examples

- Quantity and cost data must be numeric
- Names must be alphabetic
- Codes associated with an individual transaction are edited against a database containing valid codes

Data Correction

- Systems should provide error messages that alert those responsible for editing the data
  - Should specify the problem so proper corrections can be made
- Data correction involves reentering data that was not typed or scanned properly

Data Processing

- Performing calculations and other data transformations related to business transactions
  - Classifying data
  - Sorting data into categories
  - Performing calculations
  - Summarizing results
  - Storing data in the organization's database for further processing

Data Storage

- Involves updating one or more databases with new transactions
  - After being updated, this data can be further processed and manipulated by other systems

Document Production

Generating output records, documents, and reports

- Hard-copy paper reports or displays on computer screens (soft copy)
- Results from one TPS can become input to another

Most TPSs provide other useful information

- Reports that help perform various activities (e.g., inventory) and those required by local, state, and federal agencies

Activity

- What is a Transaction Processing System (TPS), and how does it differ from other types of information systems?
- Why are TPSs considered mission-critical in many organizations?
- What are the different types of transactions handled by TPS (e.g., batch vs. real-time)? Give examples.
- How do the components of a TPS (input, processing, storage, output, control) interact to ensure data integrity?
- How has the emergence of cloud computing impacted the design and deployment of TPS?

What will be covered in the rest of today's session?

What will be covered in the lecture-led session:

- Enterprise systems
- Supply chain management
- Product lifecycle management

Enterprise Systems

Enterprise Systems

An enterprise system is central to individuals and organizations of all sizes

- Ensures information can be shared across all business functions and all levels of management to support running and managing of a business

Enterprise Systems

Businesses rely on enterprise systems to perform daily activities in areas such as:

- Product supply and distribution
- Sales and marketing
- Human resources
- Manufacturing
- Accounting
- Taxation

Enterprise Resource Planning

Enterprise resource planning (ERP)

- Set of integrated programs that manage a company's vital business operations for an entire organization

Business process

- Set of coordinated and related activities that takes one or more kinds of input and creates an output of value to the customer of that process

Advantages of ERP

- Improved access to quality data for operational decision making
- AI-generated insights and the human-machine learning partnership
- Elimination of costly, inflexible legacy systems
- Improvement of work processes
- Opportunity to upgrade and standardize technology infrastructure

ERP Systems

ERP systems are commonly used in manufacturing companies, colleges and universities, professional service organizations, retailers, and healthcare organizations

- The business needs for each of these types of organizations vary greatly
- No one ERP software solution from a single vendor is “best” for all organizations

ERP Short Video

Enterprises Resource Planning Systems

Supply Chain Management (SCM)

System that includes planning, executing, and controlling all activities involved in:

- Sourcing and procurement of raw materials
- Converting raw materials to finished products
- Warehousing and delivering finished product to customers

Supply Chain Management (SCM)

Process for developing a production plan:

- Sales forecasting
- Sales and operations plan (S&OP)
- Demand management
- Detailed scheduling
- Materials requirement planning (MRP)
- Purchasing
- Production
- Sales ordering

Supply Chain Management (SCM)

ERP systems do not work directly with production machines

- Data must be passed to the ERP accounting modules to keep an accurate count of finished product inventory

Production quality data can be added based on the results of quality tests run on each batch of product produced

- Typically includes the batch identification number

Customer Relationship Management (CRM)

- Helps a company manage all aspects of customer encounters
  - Marketing, sales, distribution, accounting, and customer service
- Goal is to understand and anticipate needs of current and potential customers
- Used primarily in sales, marketing, and service organizations
  - Capture and view data about customers and improve communications

Customer Relationship Management (CRM)

Key features of a CRM system

- Contact management
- Sales management
- Customer support
- Marketing automation
- Analysis
- Social networking
- Access by mobile devices
- Import contact data

Customer Relationship Management (CRM)

- Due to the popularity of mobile devices, shoppers can easily compare products and prices on their mobile phones
  - Can also tweet experiences with a brand to dozens of friends
- Savvy retailers use their CRM systems to stay on top of what these customers are saying on social networks

CRM systems short Video

Customer Relationship Management Systems

Product Lifecycle Management (PLM)

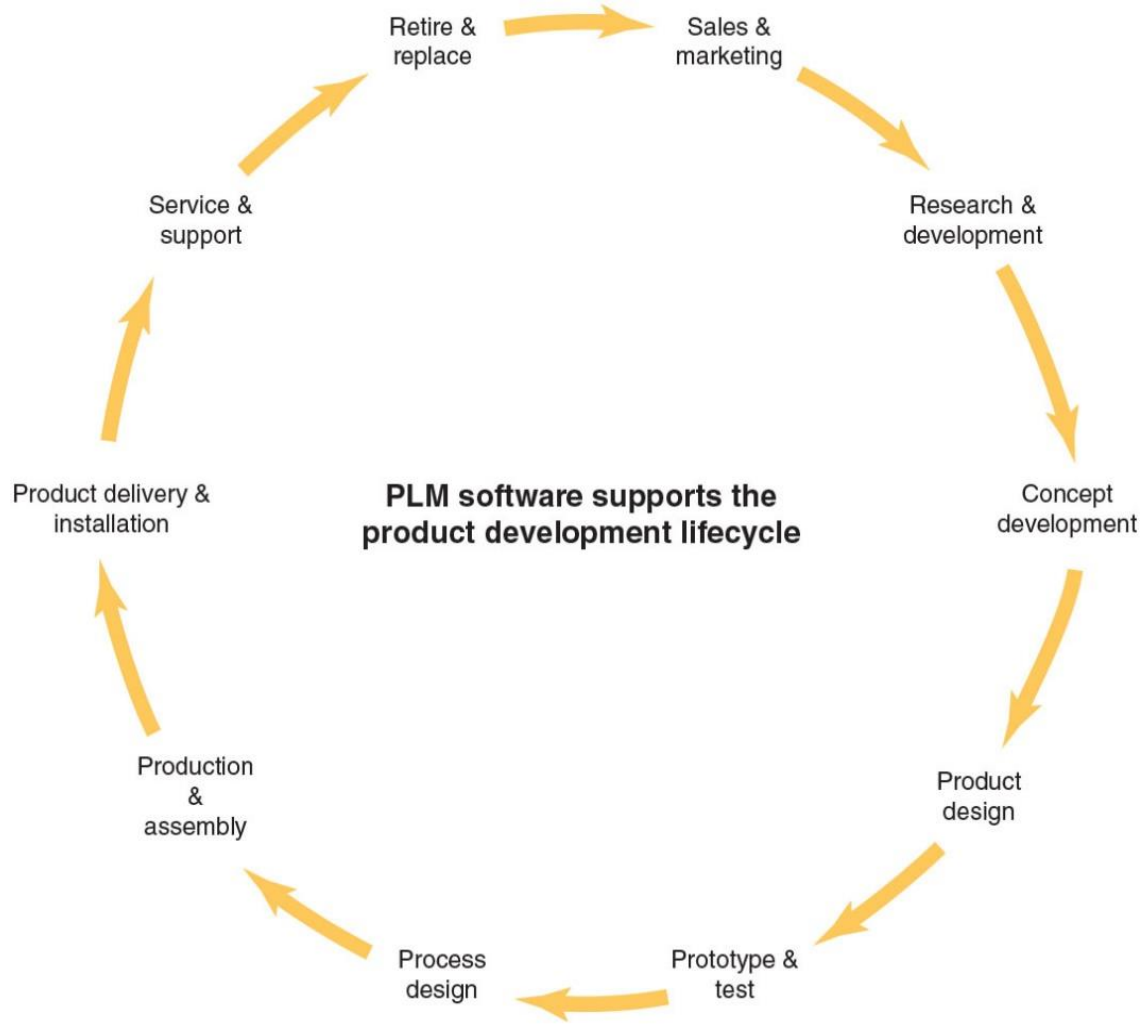
Enterprise business strategy that creates a common repository of product information and processes

- Supports collaborative creation, management, dissemination, and use of product and packaging definition information

Product lifecycle management software

- Provides a means for managing data and processes associated with various phases of the lifecycle of a product

Product Lifecycle Management (PLM)



Scope of PLM software
Using PLM software, organizations can manage the data and processes associated with the various phases of the product lifecycle.

Product Lifecycle Management (PLM)

Computer-aided design (CAD)

- Use of software to assist in creation, analysis, and modification of the design of a component or product

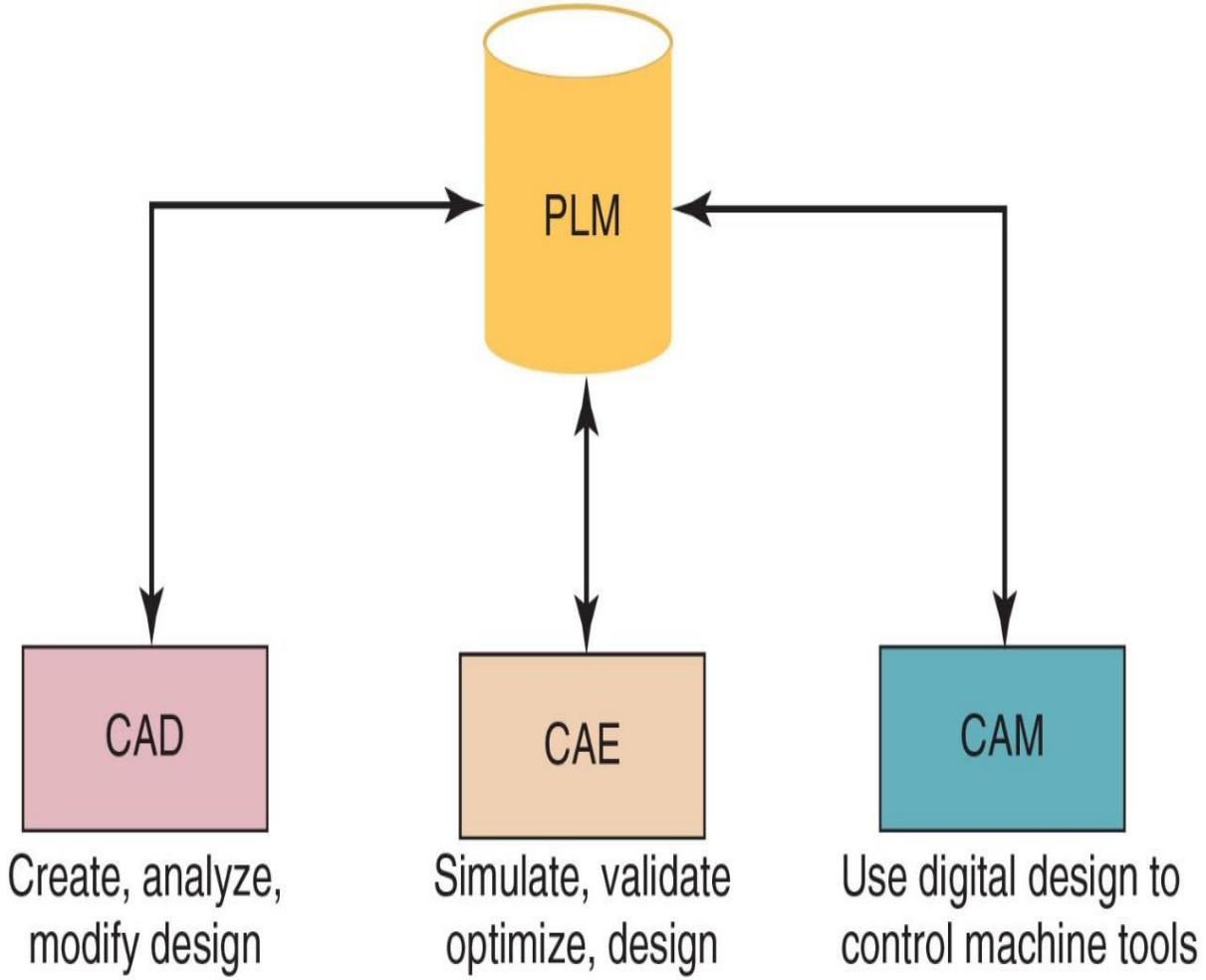
Computer-aided engineering (CAE)

- Use of software to analyze the robustness and performance of components and assemblies

Computer-aided manufacturing (CAM)

- Use of software to control tools and machinery in manufacture of components

Product Lifecycle Management (PLM)



CAD, CAE, and CAM software
In manufacturing, the model generated in CAD and verified in CAE can be entered into CAM software, which then controls the machine tool.

Product Lifecycle Management (PLM)

Discrete manufacturing

- Production of distinct items (e.g., autos, airplanes, furniture, or toys) that can be decomposed into their basic components

Process manufacturing

- Production of products that are the result of a chemical process (e.g., gasoline and pharmaceutical drugs) and that cannot be easily decomposed into its basic components

Overcoming Challenges in Implementing Enterprise Systems

Tips for avoiding a failed implementation

- Assign a full-time executive to manage
- Appoint an experienced, independent resource to provide project oversight
- Allow sufficient time to transition from the old way of doing things to the new system
- Allocate sufficient time and money for training
- Define metrics to assess project progress and to identify project-related risks
- Keep the scope of the project well defined and contained to essential business processes

Overcoming Challenges in Implementing Enterprise Systems

- Be wary of modifying the enterprise system software to conform to your firm's business practices
- Focus on documenting existing workflows before implementing and working directly with key stakeholders
- Keep in mind that the best systems require little change to existing workflow as it relates to user input/effort while eliminating the biggest pain points

Activity

- What is the goal of a customer relationship management (CRM) system? Discuss the benefits of CRM software.
- Describe product lifecycle management (PLM) software and identify the type of data stored in such a system.
- Determinine the risk that an ERP implementation project will fail. What organizational characteristics will you focus on?

Activity

- Many of the benefits of an ERP can be realized through the implementation and change process. How can updating and integrating processes and activities, as part of an ERP implementation, provide benefits to the organization? Provide specific examples.
- Assume that you are the owner of a small bicycle sales and repair shop serving hundreds of customers in your area. Identify the kinds of customer information you would like your firm's CRM system to capture. How might this information be used to provide better service or increase revenue? Identify where or how you might capture this data.

What Happens Next?

In the next session we look at Business Intelligence and Analytics, Chapter 6.

Bibliography

Stair, R. and Reynolds, G. 2020. Principles of Information Systems. 14th edition. Cengage Learning. Chapter 10.