CHAPTER

1

Introduction to Information Systems

Mass Customization… Revisited

- Building Impenetrable Customer Loyalty
  - "*A company that aspires to give customers exactly what they want must look at the world through new lenses. It must use technology to become <u>two things</u>: a mass customizer that efficiently provides individually customized goods and services, and a one-to-one marketer that elicits information from its customer about his or her specific needs and preferences.*"

    B. Joseph Pine, II, Strategic Horizons

What is Data?

- Raw Material
- Numbers and strings of letters with no precise context or meaning

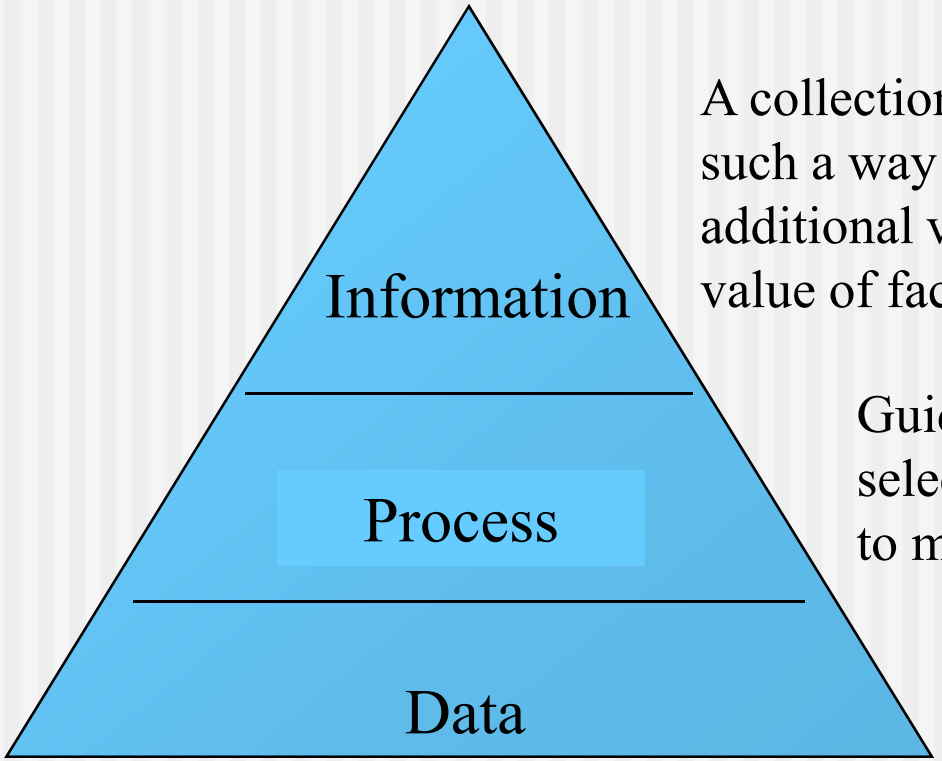
What is Information?

- Data processed with knowledge
- “Data endowed with relevance and purpose”
- “Data becomes information when its creator adds meaning”
- “An organized, meaningful, and useful interpretation of data”

What is Knowledge?

- "A body of guidelines and rules used to select, organize, and manipulate data to make it suitable for a given task"
- "An awareness and understanding of a set of information and how that information can be put to its best use"
- "Internalized information + the ability to utilize this information"

Data transformed into Information



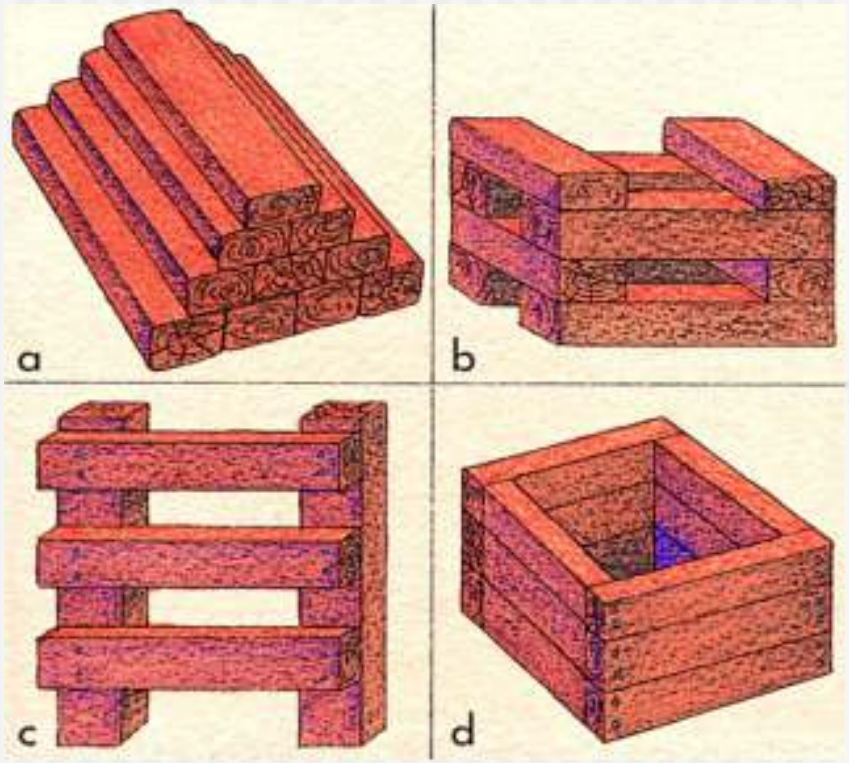
A collection of facts organized in such a way that they have additional value beyond the value of facts themselves.

Guidelines and procedures used to select, organize, and manipulate data to make it suitable for a specific task.

Raw facts

Data becomes Information

- Establishing relationships between data creates information.



Information = Data + Relationships

Characteristics of Valuable Information

- Relevant
- Complete
- Accurate
- Current/Timely
- Economical
- Accessible

Does Perfect Information Lead to Perfect Decisions?

- IBM
  - Among the first to learn that PCs were revolutionizing the computer industry.
- Wal-Mart
  - "We got big by replacing inventory with information"

Wal-Mart CIO

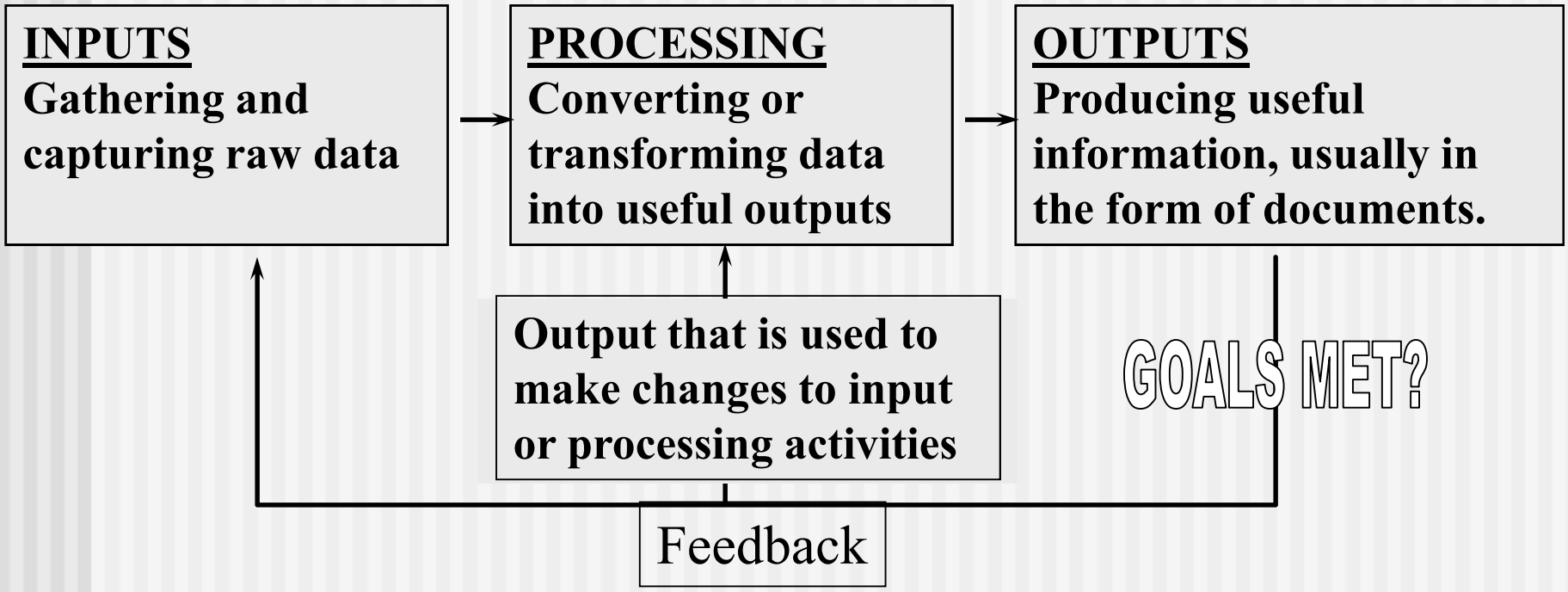
Determining the Value of Information

- Measurements
  - Time saved, lower costs
  - More accurate forecasts
  - Improved service
- Often difficult to quantify
- Payback period?

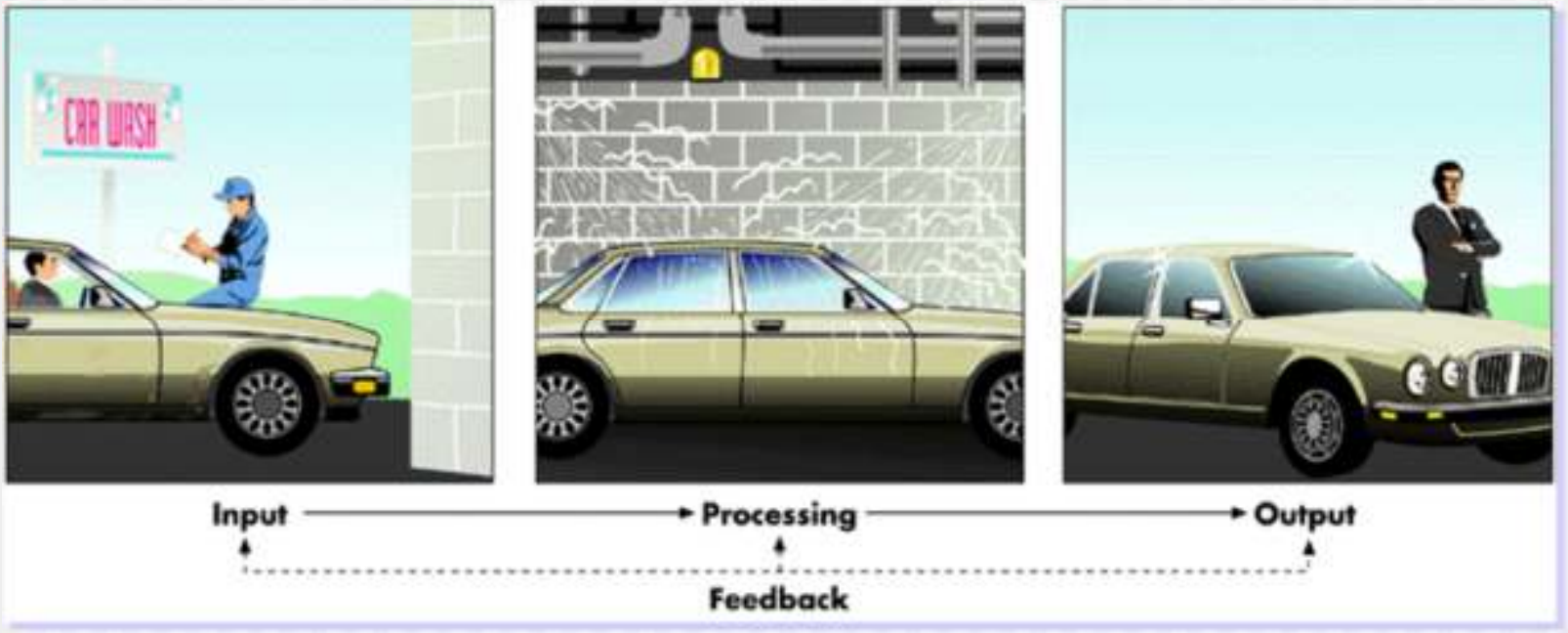
What is a System?

- Components that work together to achieve a goal by accepting input, processing it, and producing output in an organized manner.
  - e.g. a sound system

Components of a System



Components of a System



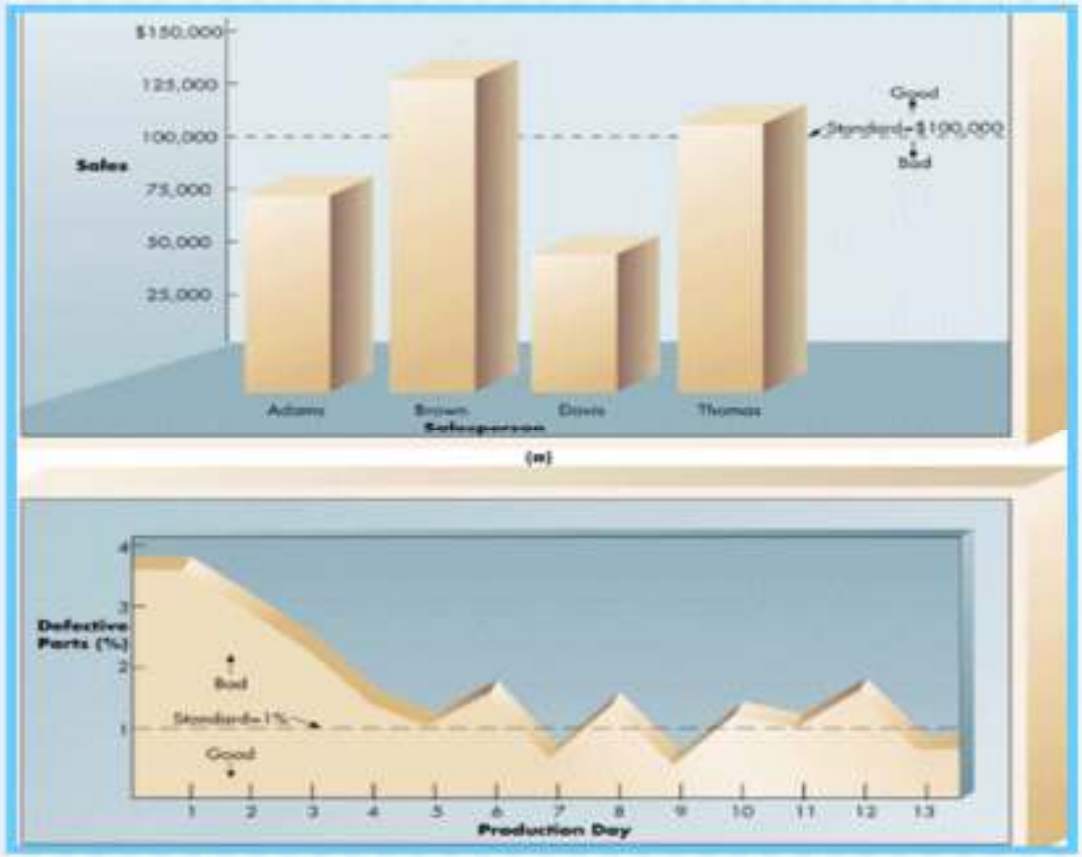
Open vs. Closed Systems

- Closed System
  - Stands alone
  - No connection to other systems
- Open System
  - Interfaces and interacts with other systems
  - Gets information from and provides information to other systems

System Performance

- Efficiency
  - A measure of what is produced divided by what is consumed.
- Effectiveness
  - A measure of what is achieved divided by the stated goal.

System Performance Standards



System Variables and Parameters

- System Variable
  - A quantity or item that can be controlled by the decision maker (controllable).
    - e.g. selling price
- System Parameter
  - A value or quantity that cannot be controlled by the decision maker.
    - e.g. raw material costs

So, What is an Information System?

Information: An organized, meaningful, and useful interpretation of data

System: Components that work together to achieve a goal by accepting input, processing it, and producing output in an organized manner

- Information System: Components that work together to process data and produce information (to help companies solve problems and make decisions).

The Components of a CBIS

1) Hardware
2) Software
   - Operating systems
   - Applications
3) Databases
4) Telecommunications/Networks
5) People
6) Procedures

Types of Business Information Systems

- Transaction Processing
- E-Commerce
- Workflow
- Enterprise Resource Planning
- Management Information
- Decision Support
- Artificial Intelligence/Expert

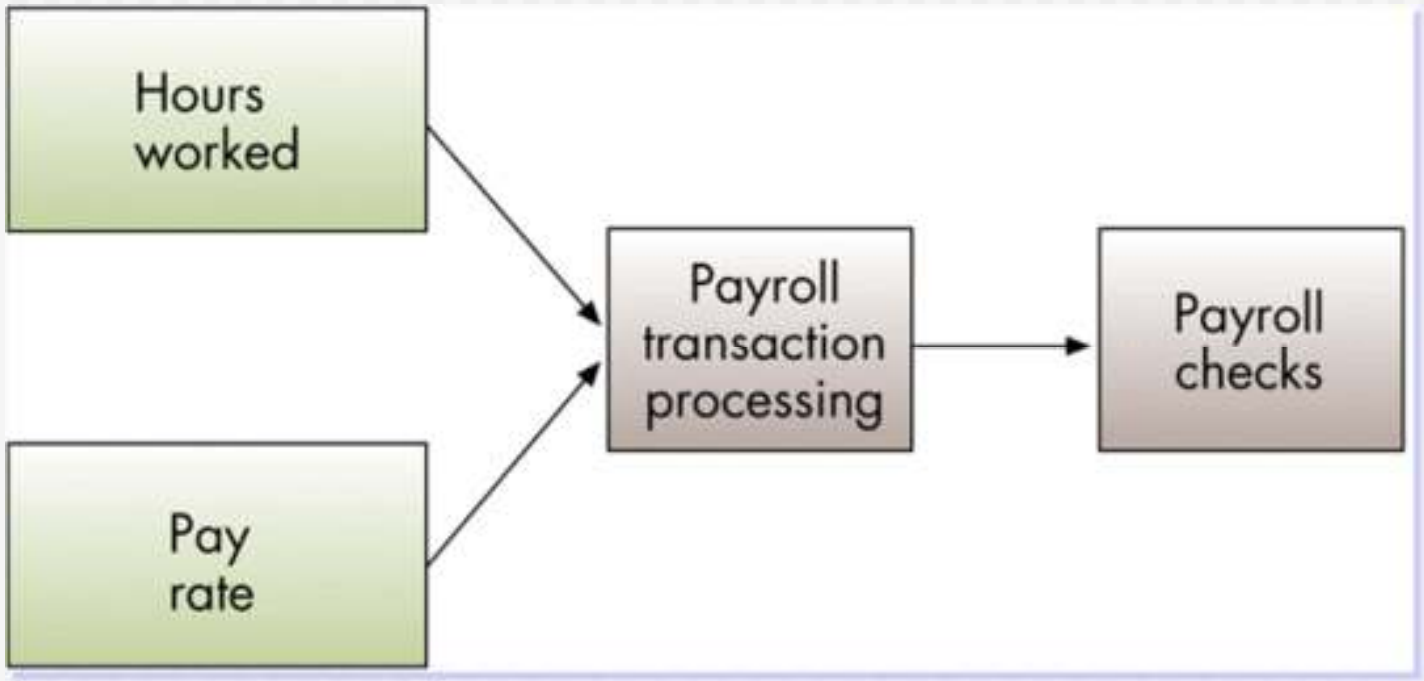
Transaction Processing

- Transaction
  - Any business related exchange
  - Tend to be routine, labor-intensive
  - “Interactions”

Transaction Processing

- Transaction processing system (TPS)
  - The application of information technology to routine, repetitive, and usually ordinary business transactions

Transaction Processing System



E-Commerce

- E-Commerce
  - Any business transaction executed electronically between parties involving the exchange of goods and/or services
    - B2B, B2C
- Workflow
  - Rule-based

E-Commerce

- Lowering Barriers to Entry
  - Traditionally
    - Sales force
    - Advertising & promotion
    - Factories, warehouses, retail stores
  - Competing electronically
    - Increases the threat of new companies

Enterprise Resource Planning (ERP)

- Integrated programs that can manage a company's entire set of business operations
- Often coordinate planning, inventory control, production and ordering

Management Information System (MIS)

- Management Information System
  - Used to provide routine information to help managers plan, control, and make decisions
- Characteristics
  - Focus on operational efficiency
  - Supports functional areas
  - Common database
  - Standard reports…

Management Information System

- Types of Reports
  - Scheduled
  - Demand
  - Exception

Decision Support Systems

- Decision Support Systems (DSS)
  - Used to support decision making (e.g. where to build, how much to order)
- Characteristics
  - Suggests and compares alternatives
  - Problem is complex
  - Information is voluminous

Artificial Intelligence

- Artificial Intelligence (AI)
  - A field that involves computer systems taking on the characteristics of human intelligence
    - Robotics
    - Natural language processing
    - Learning systems
    - Neural networks (patterns & trends)

Expert Systems

- Expert Systems (ES)
  - Give the computer the ability to make suggestions and act like an expert in a particular field
    - Medical diagnoses
    - Repair problems
    - Credit evaluations
    - Investment strategies

Systems Development

- Systems Development
  - The activity of creating or modifying existing business systems.
- Objectives
  - Make the process manageable
  - Achieve predictable costs and timing

Systems Development Steps

1) Systems Investigation
   - Gain a clear understanding of the problem to be solved or opportunity to be addressed.
2) Systems Analysis
   - Define the problems and opportunities of the existing system.
3) Systems Design
   - Determine how the new system will work to meet the business needs defined during systems analysis.

Systems Development Steps

4) Systems Implementation
   - Create or acquire the various system components defined in the design step, assemble them, and put the new system into operation.
5) System Maintenance and Review
   - Check and modify the system so that it continues to meet changing business needs.