Unit 6
Information Systems within Organizations

Introduction

Transaction Processing Systems

Functional Area Information Systems

Enterprise Resource Planning System

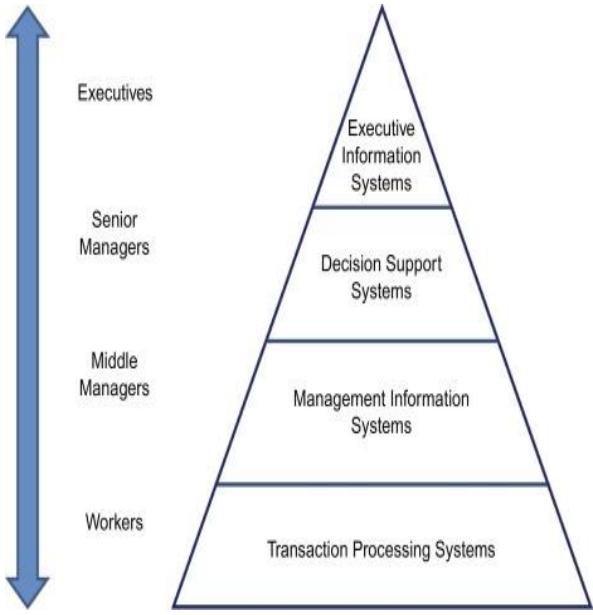
ERP Support for Business Processes.

Er Sanjeev Thapa. BE CE, MTech CSE, MBS. DevOps Eng, CKA, RHCSA, RHCE, RHCSA-Openstack, MTCNA, MTCTCE, USRS, HE IPv6. https://github.com/sanjeevlcc 2024/2081

Introduction

Feature:

- Information systems (IS) are integrated sets of components for collecting, storing, processing, and disseminating information within organizations.
- They support decision-making, coordination, and control within the organization.



Application:

- Used in various organizational functions like finance, HR, marketing, and operations.
- Facilitate communication, data management, and strategic planning.

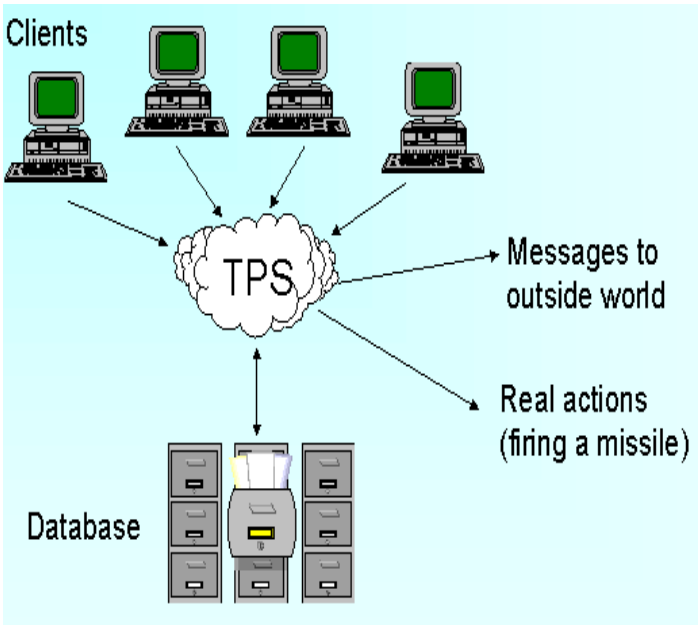
Merit:

- Enhances efficiency and productivity.
- Improves decision-making through accurate and timely information.
- Supports collaboration and communication across departments.

Demerit:

- High implementation and maintenance costs.
- Requires continuous updates and training.
- Risk of data breaches and security issues.

Transaction Processing Systems



A Transaction Processing System (TPS) is a type of information system designed to process and manage routine transactions efficiently and accurately.

Features:

- Processes large volumes of repetitive, routine transactions.
- Ensures data consistency, accuracy, and reliability.
- Operates in real-time or batch processing modes.
- Focuses on operational-level tasks.

Applications:

- **Retail**: Point-of-sale (POS) systems for processing sales transactions.
- **Banking**: ATM transactions, deposits, withdrawals, and fund transfers.
- **E-commerce**: Order processing, payment gateways, and inventory updates.
- **Healthcare**: Patient billing and appointment scheduling.
- **Manufacturing**: Inventory management and order tracking.

Advantages

1. **High Efficiency**: Processes transactions quickly and accurately.
2. **Real-Time Processing**: Provides up-to-date information for operational activities.
3. **Error Reduction**: Minimizes manual errors through automation.
4. **Scalability**: Handles large volumes of transactions efficiently.
5. **Reliability**: Ensures data integrity and consistency.

Disadvantages

1. **Limited Functionality**: Focuses only on transactional tasks; lacks analytical capabilities.
2. **High Initial Costs**: Requires significant investment in hardware, software, and infrastructure.
3. **Dependence on System Availability**: Vulnerable to downtime and system failures.
4. **Security Risks**: Prone to data breaches and cyber-attacks if not properly secured.
5. **Maintenance**: Requires regular updates and maintenance to ensure smooth operation.

Types of TPS:

1. **Batch Processing**: Transactions are collected and processed in groups at a later time (e.g., payroll processing).
2. **Real-Time Processing**: Transactions are processed immediately as they occur (e.g., ATM withdrawals).

Examples of TPS:

- **Airline Reservation Systems**: Booking and canceling tickets.
- **Online Banking Systems**: Processing payments and transfers.
- **Inventory Management Systems**: Updating stock levels after sales.

Functional Area Information Systems

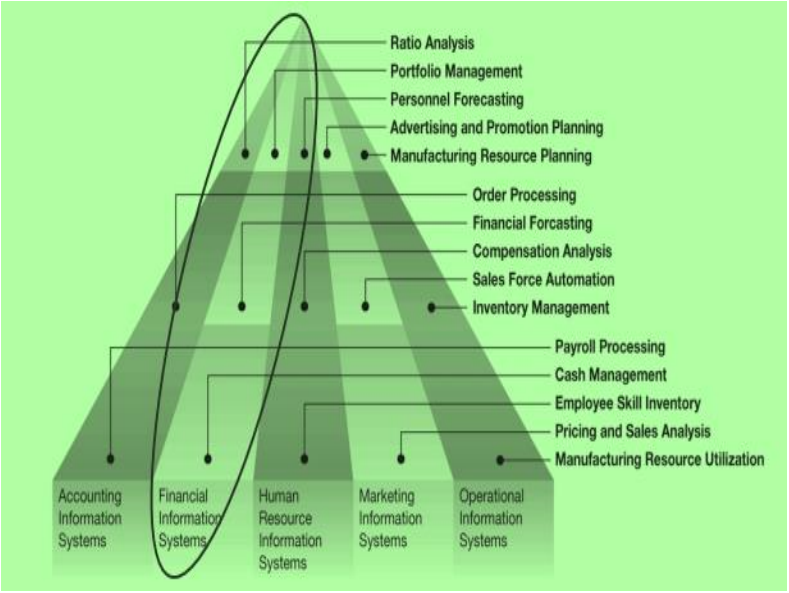
Functional Area Information Systems (FAIS) are specialized information systems designed to support specific departments or functions within an organization.

Features:

- Tailored to meet the unique needs of individual departments (e.g., finance, HR, marketing).

Functional Area	Information System	Examples of Typical Systems
Accounting and Finance	Systems used for managing, controlling, and auditing the financial resources of the organization	▮ Inventory management ▮ Accounts payable ▮ Expense accounts ▮ Cash management ▮ Payroll processing
Human Resources	Systems used for managing, controlling, and auditing the human resources of the organization	▮ Recruiting and hiring ▮ Education and training ▮ Benefits management ▮ Employee termination ▮ Workforce planning
Marketing	Systems used for managing new product development, distribution, pricing, promotional effectiveness, and sales forecasting of the products and services offered by the organization	▮ Market research and analysis ▮ New product development ▮ Promotion and advertising ▮ Pricing and sales analysis ▮ Product location analysis
Production and Operations	Systems used for managing, controlling, and auditing the production and operations resources of the organization	▮ Inventory management ▮ Cost and quality tracking ▮ Materials and resource planning ▮ Customer service tracking ▮ Customer problem tracking ▮ Job costing ▮ Resource utilization

- Focuses on improving efficiency and effectiveness within a specific functional area.
- Provides detailed insights and reports for decision-making within the department.



Applications:

1. **Human Resource Information Systems (HRIS)**:
   - Manages employee data, payroll, recruitment, and performance evaluation.
2. **Financial Information Systems (FIS)**:
   - Handles budgeting, accounting, financial reporting, and tax management.
3. **Marketing Information Systems (MIS)**:
   - Supports customer analysis, campaign management, sales tracking, and market research.
4. **Manufacturing Information Systems**:
   - Manages production schedules, inventory control, and quality assurance.
5. **Supply Chain Management Systems (SCMS)**:
   - Tracks procurement, logistics, and distribution activities.

Advantages:

1. **Department-Specific Solutions**: Designed to address the unique needs of each functional area.
2. **Improved Efficiency**: Streamlines processes and reduces manual effort within the department.
3. **Enhanced Decision-Making**: Provides detailed data and analytics for better decision-making.
4. **Better Resource Management**: Optimizes the use of resources within the department.

5. **Increased Productivity**: Automates routine tasks, allowing employees to focus on strategic activities.

Disadvantages:

1. **Limited Integration**: May not integrate well with other functional systems, leading to data silos.
2. **High Customization Costs**: Requires significant investment to tailor the system to specific needs.
3. **Maintenance Challenges**: Regular updates and maintenance are needed to keep the system functional.
4. **Dependence on Departmental Expertise**: Requires skilled personnel to operate and manage the system.
5. **Risk of Redundancy**: May duplicate efforts if not aligned with organization-wide systems.

Examples of FAIS:

- **HRIS**: SAP SuccessFactors, Workday.
- **FIS**: QuickBooks, Oracle Financials.
- **MIS**: Salesforce, HubSpot.
- **Manufacturing Systems**: SAP Manufacturing, Oracle Manufacturing Cloud.
- **SCMS**: SAP SCM, Oracle SCM.

https://courses.acs.uwinnipeg.ca/1803-770/lecture_notes/docs/LOutline_5-1_F_15.pdf

Enterprise Resource Planning System

An Enterprise Resource Planning (ERP) system is an integrated software platform that manages and automates core business processes across an organization.

- **Features**:
  - Centralized database for seamless data sharing across departments.
  - Modules for finance, HR, supply chain, manufacturing, sales, and more.
  - Real-time data processing and reporting.
  - Supports end-to-end business processes.

Applications:

1. **Finance and Accounting**: Budgeting, invoicing, and financial reporting.
2. **Human Resources**: Payroll, recruitment, and employee management.
3. **Supply Chain Management**: Procurement, inventory, and logistics.
4. **Manufacturing**: Production planning, quality control, and scheduling.
5. **Sales and Marketing**: Customer relationship management (CRM), sales tracking, and campaign management.
6. **Customer Service**: Support ticket management and service tracking.

Advantages

1. **Integration**: Combines data from all departments into a single system, eliminating data silos.
2. **Efficiency**: Streamlines business processes and reduces manual effort.
3. **Real-Time Data**: Provides up-to-date information for better decision-making.
4. **Cost Savings**: Reduces operational costs through automation and improved resource management.

5. **Scalability**: Adapts to the growing needs of the organization.
6. **Improved Collaboration**: Enhances communication and coordination across departments.

Disadvantages

1. **High Implementation Costs**: Expensive to purchase, customize, and implement.
2. **Complexity**: Requires significant time and effort to configure and integrate with existing systems.
3. **Training Requirements**: Employees need extensive training to use the system effectively.
4. **Resistance to Change**: Employees may resist adopting the new system.
5. **Dependence on Vendors**: Organizations rely on vendors for updates and support.
6. **Risk of Failure**: Poor implementation can lead to system failure and financial losses.

Examples of ERP Systems:

- **SAP ERP**: Widely used in large enterprises for its comprehensive features.
- **Oracle ERP Cloud**: Known for its scalability and cloud-based solutions.
- **Microsoft Dynamics 365**: Integrates well with other Microsoft products.
- **Infor ERP**: Popular in manufacturing and distribution industries.
- **NetSuite**: Cloud-based ERP for small to medium-sized businesses.

Key Modules in ERP Systems:

1. **Finance Module**: Manages accounting, budgeting, and financial reporting.
2. **HR Module**: Handles payroll, recruitment, and employee performance.
3. **Supply Chain Module**: Tracks procurement, inventory, and logistics.
4. **Manufacturing Module**: Manages production planning and quality control.
5. **Sales and Marketing Module**: Supports CRM, sales tracking, and campaign management.
6. **Customer Service Module**: Manages support tickets and service requests.

ERP Support for Business Processes

Definition: ERP systems provide end-to-end support for key business processes by integrating data and workflows across departments.

Features:

- Automates and standardizes business processes.
- Provides real-time data and analytics for process optimization.
- Ensures seamless communication and coordination between departments.
- Supports both operational and strategic decision-making.

http://github.com/sanjeevlcc/notes_2081/blob/main/BIM_6_Business%20Information%20Systems/LAB_MAUSAM/ERP_Support_for_Business_Processes.ipynb

How ERP Supports Business Processes:

1. **Procurement**:
   - Automates purchase orders, supplier management, and invoice processing.
   - Tracks inventory levels and ensures timely replenishment.
   - Example: SAP Ariba for procurement automation.
2. **Production and Manufacturing**:
   - Manages production schedules, work orders, and quality control.
   - Tracks raw materials, work-in-progress, and finished goods.
   - Example: Oracle Manufacturing Cloud for production planning.
3. **Sales and Order Management**:
   - Tracks customer orders, invoices, and payments.
   - Manages pricing, discounts, and promotions.
   - Example: Microsoft Dynamics 365 for sales automation.

4. **Inventory and Supply Chain Management**:
    - Optimizes inventory levels and reduces stockouts.
    - Tracks shipments, deliveries, and logistics.
    - Example: Infor SCM for supply chain optimization.
5. **Finance and Accounting**:
    - Automates budgeting, financial reporting, and tax compliance.
    - Tracks accounts payable and receivable.
    - Example: SAP S/4HANA for financial management.
6. **Human Resources**:
    - Manages payroll, recruitment, and employee performance.
    - Tracks attendance, leaves, and training programs.
    - Example: Workday for HR management.
7. **Customer Relationship Management (CRM)**:
    - Tracks customer interactions and support requests.
    - Manages sales pipelines and marketing campaigns.
    - Example: Salesforce integrated with ERP systems.

Advantages:

1. **Process Automation**: Reduces manual effort and improves efficiency.
2. **Real-Time Data Access**: Provides up-to-date information for better decision-making.
3. **Improved Collaboration**: Enhances communication between departments.
4. **Cost Savings**: Reduces operational costs through streamlined processes.
5. **Scalability**: Adapts to the growing needs of the organization.
6. **Compliance**: Ensures adherence to regulatory and industry standards.

Disadvantages:

1. **Complex Implementation**: Requires significant time and resources to set up.
2. **High Costs**: Expensive to purchase, customize, and maintain.

3. **Training Requirements**: Employees need extensive training to use the system effectively.
4. **Resistance to Change**: Employees may resist adopting new processes.
5. **Dependence on Vendors**: Organizations rely on vendors for updates and support.
6. **Risk of Failure**: Poor implementation can disrupt business operations.

Examples of ERP Support in Business Processes:

- **Procurement**: Automating purchase orders and supplier payments.
- **Manufacturing**: Tracking production schedules and quality control.
- **Sales**: Managing customer orders and invoices.
- **Finance**: Generating financial reports and managing budgets.
- **HR**: Processing payroll and managing employee records.

Q/A

Fill-in-the-Blanks Questions

Multiple-Choice Questions (MCQs)

Comprehensive Questions

Answers to Fill-in-the-Blanks

Answers to Multiple-Choice Questions (MCQs)