

CPA BEC - STUDY UNIT 11

Information Technology I

Core Concepts

A. Role of Business Information Systems

1. A **business information system** is any combination of people, procedures, and computing equipment employed to pursue a business objective.
2. The **four major tasks** of any information system are input, transformation, output, and storage.
3. A **transaction processing system (TPS)** captures the fundamental data that reflect the economic life of an organization.
4. A **management information system (MIS)** typically receives input from a TPS, aggregates it, then reports it in a format useful to middle management in running the business.
5. A **data warehouse** is a central database for transaction-level data from more than one of the organization's TPSs. The ability of the data warehouse to relate data from multiple systems makes it a very powerful tool for ad hoc queries.
 - a. A **data mart** is a subset of an enterprise-wide data warehouse.
 - b. A data warehouse enables **data mining**, i.e., the search for unexpected relationships between data.
6. A **decision support system (DSS)** is an interactive system that is useful in solving structured and semistructured problems, that is, those requiring a management decision maker to exercise his or her insight and judgment. A DSS does not automate a decision.
7. An **expert system (ES)** is an interactive system that attempts to imitate the reasoning of a human expert in a given field. It is useful for addressing unstructured problems when there is a local shortage of human experts.
8. **Artificial intelligence (AI)** is even more sophisticated than expert systems. AI attempts to imitate human decision making, which hinges on a combination of knowledge and intuition.
9. **Business intelligence (BI)** is what gives upper management the information it needs to know where the organization is and how to steer it in the intended direction. BI gives an executive immediate information about an organization's critical success factors.
10. **Enterprise resource planning (ERP)** is the latest phase in the development of computerized systems for managing organizational resources. ERP is intended to integrate enterprise-wide information systems by creating one database linked to all of an organization's applications.
11. **Office automation systems (OASs)**, the word processing, spreadsheet, digital document storage, and desktop publishing applications familiar to most office workers, are part of any organization's information systems environment.

B. Risks Associated with Business Information Systems

1. The **goals** of a business information system are the same regardless of whether it is manual or computer-based.
2. The **risks**, on the other hand, can be quite different. They include system availability, volatile transaction trails, decreased human involvement, uniform processing of transactions, unauthorized access, data vulnerability, reduced segregation of duties, reduced individual authorization of transactions, and specialized knowledge.

C. Roles and Responsibilities within the IT Function

1. **Typical IT Personnel:** Database administrators (DBAs), network technicians, webmaster, computer (console) operators, librarians, systems programmers, applications programmers, and help desk.
2. **Segregation of Duties within the IT Function**
 - a. **Information security.** Information systems pervade every part of a modern organization's operations. Therefore, the area of security over information systems is a distinct function within the larger IT function. The IT security officer is responsible for formulating and enforcing a formal information security policy for all employees and outside parties, such as EDI partners, who have access to the organization's systems.
 - b. **Systems development and maintenance.** Users within the organization are constantly requesting the creation of new systems to help manage business processes and changes and enhancements to existing systems.
 - c. **Computer operations.** Console operators are responsible only for the smooth running of the organization's medium- and large-scale computers, i.e., the scheduling of jobs and production of output.
 - d. **Data administration.** Data administrators determine how the organization's data should be stored and what relationships among the data best achieve the organization's business objectives. Database administrators (DBAs) keep the organization's databases running efficiently.
 - e. **End users.** In an organizational sense, the data "belong" to the end user departments; the accounting function is responsible for the accuracy of accounting data, the marketing function is responsible for the accuracy of marketing data, etc. The IT function is merely the custodian of the data.

D. Systems Development and Design

1. By far the the most common methodology for building new information systems is the **systems development life-cycle (SDLC) approach**. The SDLC approach is highly structured and, if properly followed, can help an organization deploy maintainable, well-documented systems with the functionality that was intended.
2. The **steps** in the systems development life-cycle are as follows: project definition phase, feasibility study, cost-benefit analysis, project initiation phase, systems analysis, systems design, physical database design, program development, procedure development, installation and operation, and systems maintenance