BSA 2206 – Accounting Information Systems II
BSA 2: SEM TWO
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Topic 1.1 : Over view of Accounting Information Systems

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Tuesday / Friday: 01:00pm -03:00pm
Tuesday/Friday : 05:30 pm - 07:30 pm

Over view of AIS

- Understand the primary information flows within the business environment.

- Understand the difference between AIS and MIS.

- Understand the difference between a financial transaction and a nonfinancial transaction.

- Know the principal features of the general model for information systems.

- Be familiar with the functional areas of a business and their principal activities.

- Understand the relationship between external auditing, internal auditing, and IT auditing.

Key Regulations for AIS

- The Sarbanes-Oxley Act (SOX) of 2002 established new corporate governance regulations and standards for public companies registered with the Securities and Exchange Commission (SEC).

- Generally accepted accounting principles (GAAP)

- **Others include: GRI; IAS; IFRS**

- Useful information has the following characteristics: relevance, timeliness, accuracy, completeness, and summarization.

The Information Environment

- AIS recognizes that information is a business resource.
- Business resources of raw materials, capital, and labor, information are vital to the survival of the business organization.
- Every business day, vast quantities of information flow to decision-makers and other users to meet a variety of internal needs.

- Information flows out from the organization to external users, such as customers, suppliers, and stakeholders who have an interest in the firm.

- Every individual in the organization, from business operations to top management, needs information to accomplish his or her tasks.
- The organization is divided into three management tiers: operations management, middle management, and top management.
    - Operations management is directly responsible for controlling day-to-day operations.
    - Middle management is accountable for the short-term planning and coordination of activities necessary to accomplish organizational objectives.
    - Top management is responsible for longer-term planning and setting organizational objectives.

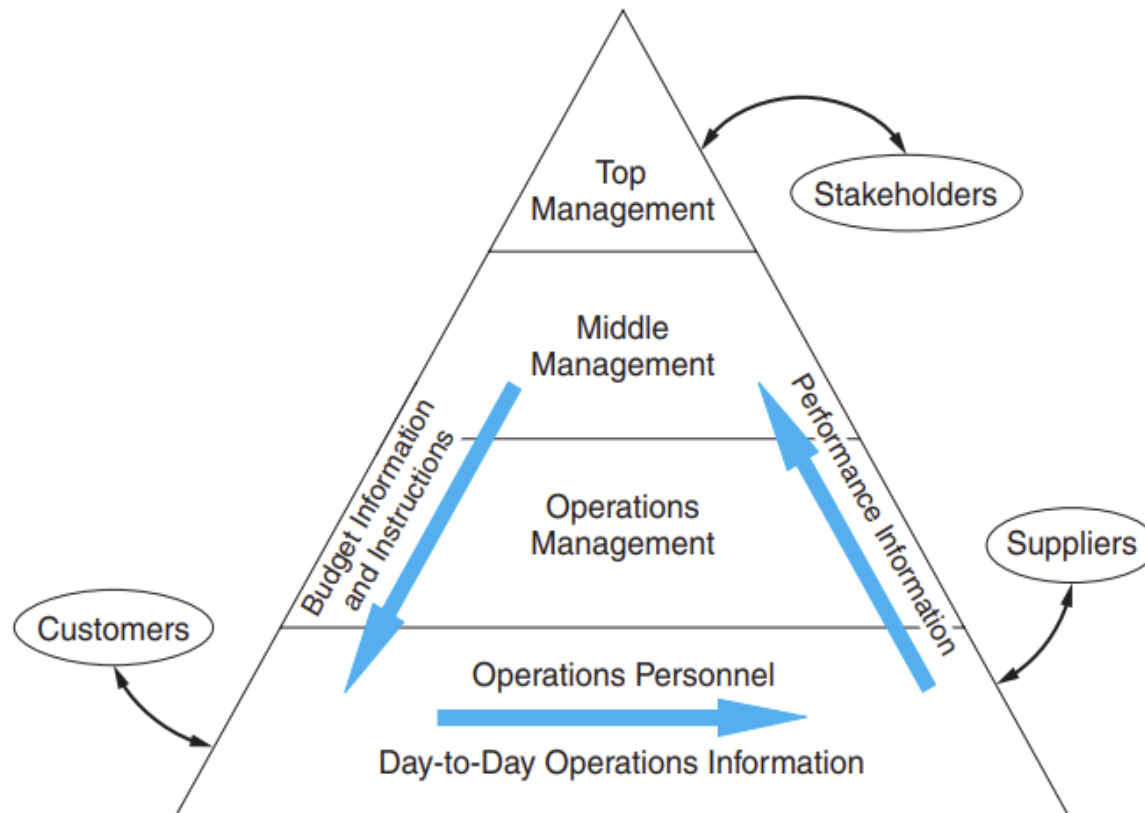# The Internal and External Flow of Information

Figure 1.1: Flow of Information

The Flow of Information.

- The vertical flow distributes summarized information about operations and other activities upward to managers at all levels.

- Management uses this information to support its various planning and control functions.

- Information also flows downward from senior managers to junior managers and operations personnel in the form of instructions, quotas, and budgets.

- A third flow of information represents exchanges between the organization and users in the external environment.

- External users fall into two groups: trading partners and stakeholders.

  - Exchanges with trading partners include customer sales and billing information, purchase information for suppliers, and inventory receipts information.

  - Stakeholders are entities outside (or inside) the organization with a direct or indirect interest in the firm.

- Stockholders, financial institutions, and government agencies are examples of external stakeholders.

  - Information exchanges with these groups include financial statements, tax returns, and stock transaction information.

  - Inside stakeholders include accountants and internal auditors. All user groups have unique information requirements.
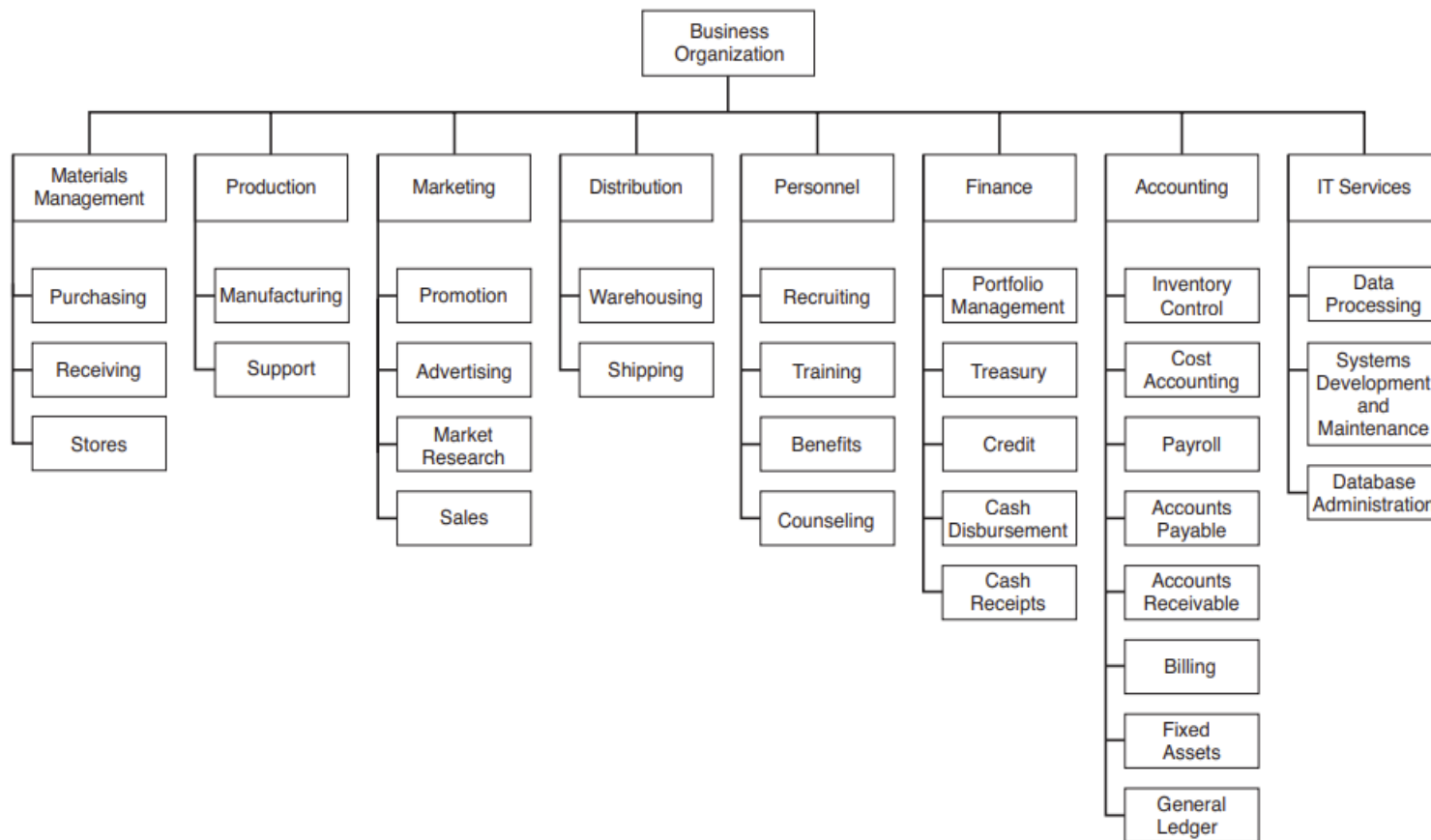
Functional Areas of a Firm

Figure 1.2: Main Functional Areas of a Firm

Key Functions to Note

- **Accounting Independence**: Information reliability rests heavily on the concept of accounting independence.
  - Accounting activities must be separate and independent of the functional areas that maintain custody of physical resources.
- **Centralized Data Processing:** All the data processing is performed by one or more large computers housed at a central site that serves users throughout the organization.
- **Distributed data processing (DDP)**: This is an alternative to the centralized model. DDP involves reorganizing the IT function into small information processing units (IPUs) that are distributed to end users and placed under their control.
- **The Information Technology Function:** Like accounting, the IT function is associated with the information resource. One structure is the centralized data processing approach; the other is the distributed data processing approach.
- **Database Administration.** Centrally organized companies maintain their data resources in a central location that is shared by all end users.
  - A special independent group—database administration—headed by the database administrator is responsible for the security and integrity of the database.
- **Data Processing.** The data processing group manages the computer resources used to perform the day-to-day processing of transactions. It may consist of data control, data conversion, computer operations, and the data library.
- **Systems Development and Maintenance**. The information needs of users are met by two related functions: systems development and systems maintenance.
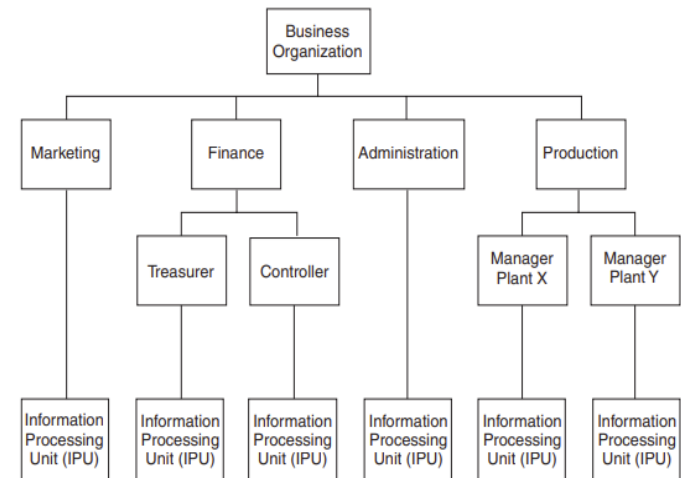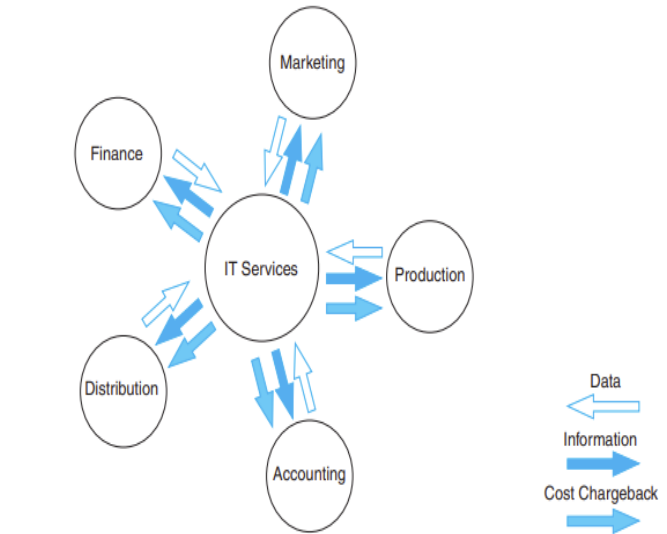
Fig 1.3 Centralized Data Processing Approach and the DDP

What Is a System?

- A system is a group of two or more interrelated components or subsystems that serve a common purpose.

- The term system generates mental images of computers and programming.

- Some systems are naturally occurring, whereas others are artificial.
    - ❑ Natural systems range from the atom: a system of electrons, protons, and neutrons—to the universe—a system of galaxies, stars, and planets. All life forms, plant and animal, are examples of natural systems.
    - ❑ Artificial systems are manmade. These systems include everything from clocks to submarines and social systems to information systems.

- Elements of a System: Regardless of their origin, all systems possess some common elements.
    - o A system is a group of two or more interrelated components or subsystems that serve a common purpose.

Elements of a System:

- Regardless of their origin, all systems possess some common elements.
    - **Multiple Components**. A system must contain more than one part.
    - **Relatedness.** A common purpose relates to the multiple parts of the system. Although each part functions independently of the others, all parts serve a common objective.
    - **Purpose.** A system must serve at least one purpose, but it may serve several. Whether a system provides a measure of time, electrical power, or information, serving a purpose is its fundamental justification.
    - E.g: automobile system serves only one purpose: providing conveyance
    - **System Decomposition**. Decomposition is the process of dividing the system into smaller subsystem parts.
    - **Subsystem Interdependency.** A system's ability to achieve its goal depends on the effective functioning and harmonious interaction of its subsystems.

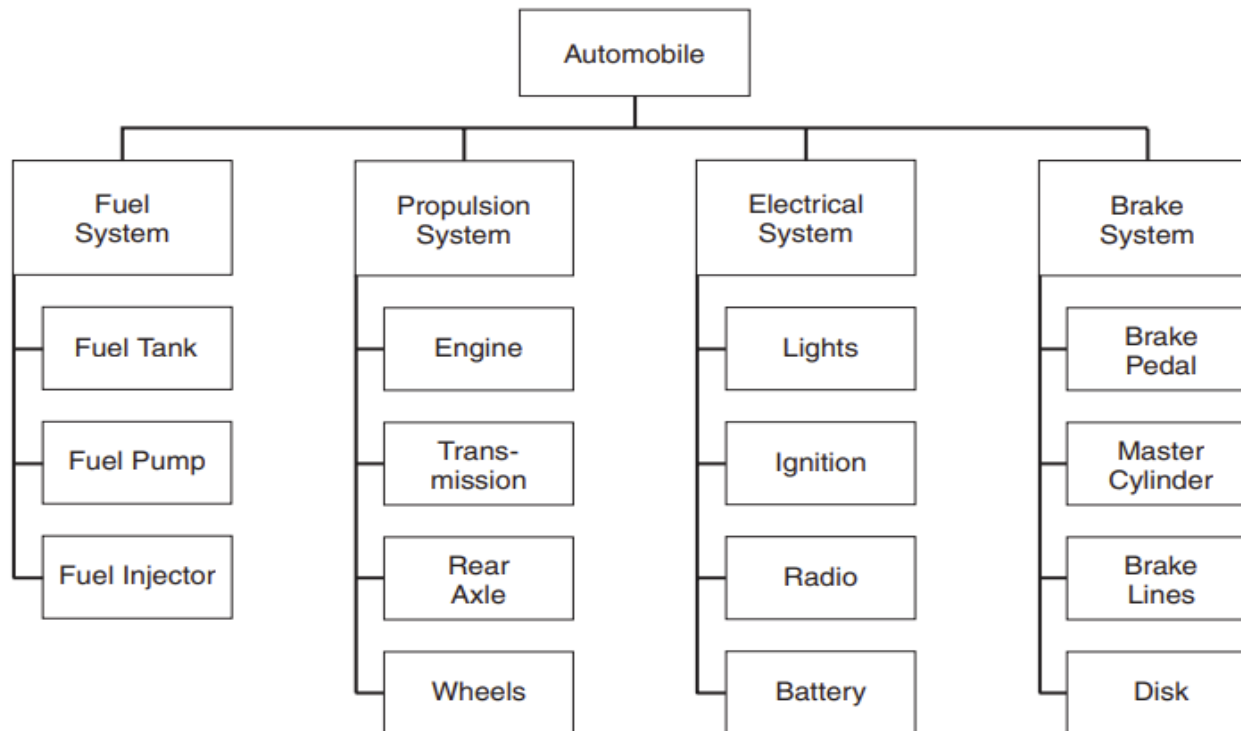# Primary Subsystem of an Automobile

Figure 1.4. System Decomposition.

An Information Systems Framework.

- The information system is the set of formal procedures by which data are collected, processed into information, and distributed to users.

- Systems emerge from the accounting information system (AIS) and the management information system (MIS).

- MIS and AIS functions are integrated to achieve operational efficiency.

- The information system accepts input (transactions), which are converted through various processes into output information that goes to users.

- Transactions fall into two classes: financial transactions and nonfinancial transactions.

- A transaction is an event that affects or is of interest to the organization and is processed by its information system as a unit of work.

- A financial transaction is an economic event that affects the assets and equities of the organization, is reflected in its accounts, and is measured in monetary terms.

  - E.g Sales of products to customers, and purchases of inventory from vendors, are examples of financial transactions.

  - Every business organization is legally bound to correctly process these types of transactions.

- Non-financial transactions are events that are non-economic in nature. E.g, adding a new supplier of raw materials to the list of valid suppliers is an event that may be processed by the enterprise's information system as a transaction.

  - The firm has no legal obligation to process it correctly—or at all.

Information System Objectives

- Each organization must tailor its information system to the needs of its users.

- Three fundamental objectives common to all systems:
  - **To support the stewardship function of management**. Stewardship refers to management's responsibility to properly manage the resources of the firm. The information system provides information about resource utilization to external users via traditional financial statements and other mandated reports. Internally, management receives stewardship information from various responsibility reports.

  - **To support management decision-making.** The information system supplies managers with the information they need to carry out their decision-making responsibilities.

  - **To support the firm's day-to-day operations.** The information system provides information to operations personnel to assist them in the efficient and effective discharge of their daily tasks.
- **Acquisition of Information Systems**: (1) developing customized systems from scratch through in-house systems development activities (system development life cycle), and (2) purchasing preprogrammed commercial systems from software vendors
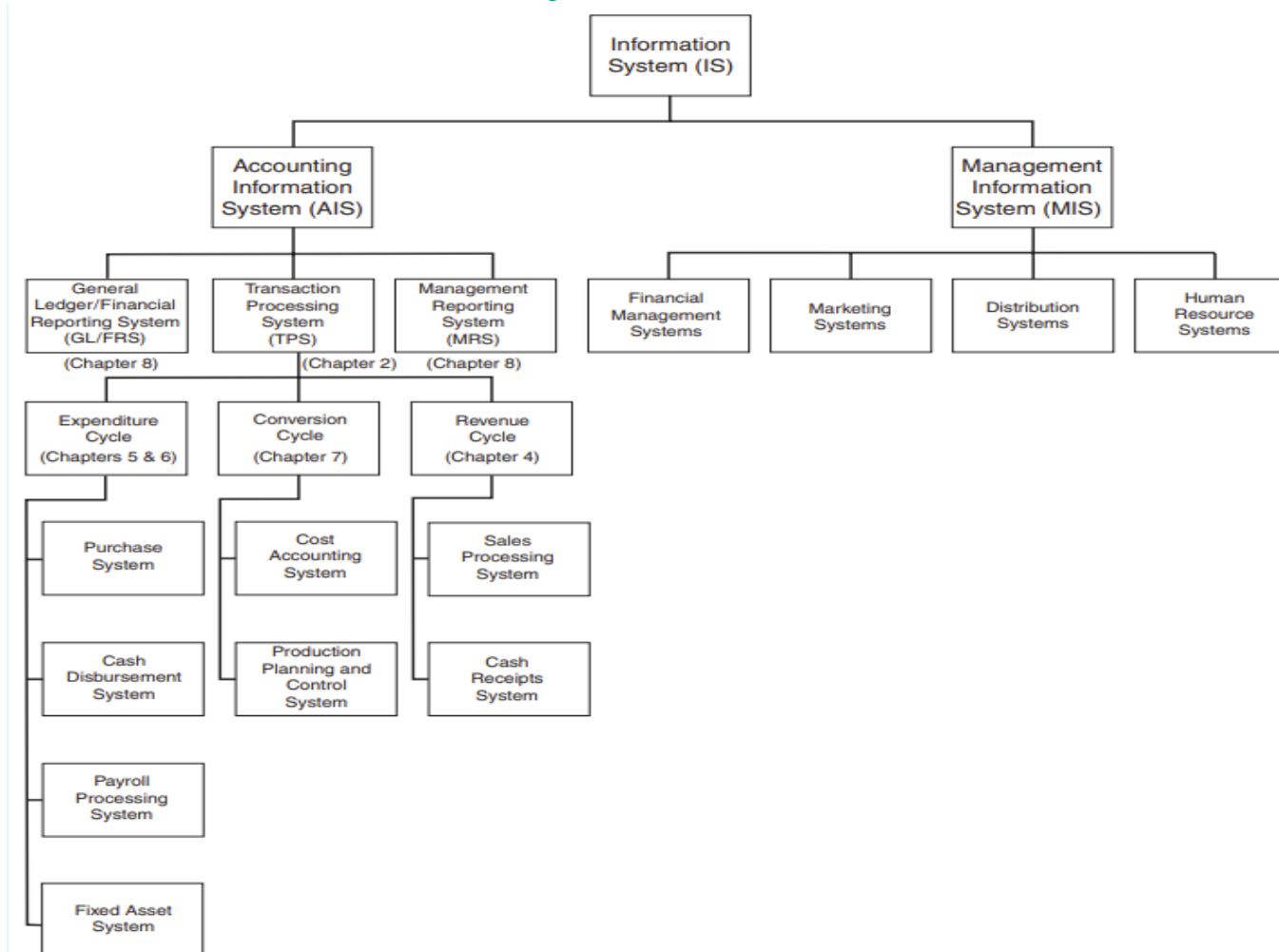
An Information Systems Framework.

Figure 1.5: A Framework for Information Systems

Information System Models

- There are five Information system models:

  ✓ Manual processes

  ✓ Flat-file systems

  ✓ The database approach

  ✓ The Resources, Events, and Agents) model (REA)

  ✓ Enterprise resource planning systems (ERP)

Source: W. E. McCarthy, "The REA Accounting Model: A Generalized Framework for Accounting Systems in a Shared Data Environment." The Accounting Review (July 1982): 554–57.

The Management Information System.

- MIS processes nonfinancial transactions that are not normally processed by traditional AIS.

Function	Examples of MIS Applications
Finance	Portfolio Management Systems Capital Budgeting Systems
Marketing	Market Analysis New Product Development Product Analysis
Distribution	Warehouse Organization and Scheduling Delivery Scheduling Vehicle Loading and Allocation Models
Personnel	Human Resource Management Systems • Job skill tracking system • Employee benefits system

Discuss in your Groups and share in Class Why Is it Important to Distinguish between AIS and MIS.

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The Accounting Information System

- AIS subsystems process financial transactions and nonfinancial transactions that directly affect the processing of financial transactions.

- For example, changes to customers' names and addresses are processed by the AIS to keep the customer file current.

- **The AIS is composed of three major subsystems:**
  - The transaction processing system (TPS), which supports daily business operations with numerous reports, documents, and messages for users throughout the organization;

  - The general ledger/financial reporting system (GL/FRS), which produces traditional financial statements, such as the income statement, balance sheet, statement of cash flows, tax returns, and other reports required by law;

  - The management reporting system (MRS), which provides internal management with special-purpose financial reports and information needed for decision making such as budgets, variance reports, and responsibility reports.

Review Questions

Q1. Examine the relationship between organizational structure and the information system.

Q2. Discuss any two general methods of organizing the IT function: the centralized approach and the distributed approach.

Q3. Discuss the evolution of the Five AIS models. Highlight the shortcomings and limitations of each that led to the evolution of its predecessor.

Q4. Explain three key roles of accountants as (1) users of AIS, (2) designers of AIS, and (3) auditors of AIS.

Q5. What is the role of the accounting function in an organization?

Q6. What three roles are played by accountants with respect to the information system?

Q7. Discuss the differences between internal and external users of information and their needs and demands on an information system.

Q8. If accountants are viewed as providers of information, then why are they consulted as system users in the systems development process?

Q9. Why is it important to organizationally separate the accounting function from other functions of the organization?

Attributes and Principles of Accounting Information.

The attributes of accounting information refer to the qualities necessary to satisfy the user's needs.

- Two essential elements for the general purpose accounting reports supplied to external users (1) Relevance and (2) Reliability.

  – For the accounting information to be useful, information must be relevant. Relevance of accounting information is judged in relation to the users' situations. It is relevant for assessing the pas performance only : to predict the future profitability or liquidity, one has to use forecasts that are not usually include in accounting reports.

  – Accounting information must also be reliable. Reliability in accounting information signifies faithfulness, consistence and trustworthiness. This is done by ensuring adherence to the accounting principles.

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The hierarchy of accounting attributes.

Figure 1.6 shows the hierarchy of accounting information attributes as presented by the FASB Concept. Relevance is subdivided into predictive value, feedback value, and timeliness.

- **Relevance**: Relevance accounting assists users in predicting the future, provides feedback on past decisions, and is available when needed.
    - Predictive Value. Refers to the usefulness of inputs for predictions, such as cash flows or earning power, rather than being an actual prediction itself.
    - Feedback Value. Concerns "confirming or correcting their [decision makers] earlier expectations." It thus refers to assessing where the firm presently stands and overlaps with how well management has carried out its functions
    - Timeliness. To be relevant, information must be timely, which means that it must be available when needed "available to decision-makers before it loses its capacity to influence decisions.
- **Reliability:** The reliability quality is subdivided into (a) verifiability, (b) faithful representation, and neutrality.
    - ✓ Verifiability: the degree of consensus among measures. It is thus concerned with measurement theory.
    - ✓ Representational Faithfulness Accounting information must faithfully represent the financial position of the enterprise. Information has to be a close approximation of the state of the entity to satisfy the reliability test.
    - ✓ Neutrality refers to the unbiased estimation of facts..

Figure 1.6 A Hierarchy of Accounting Qualities.
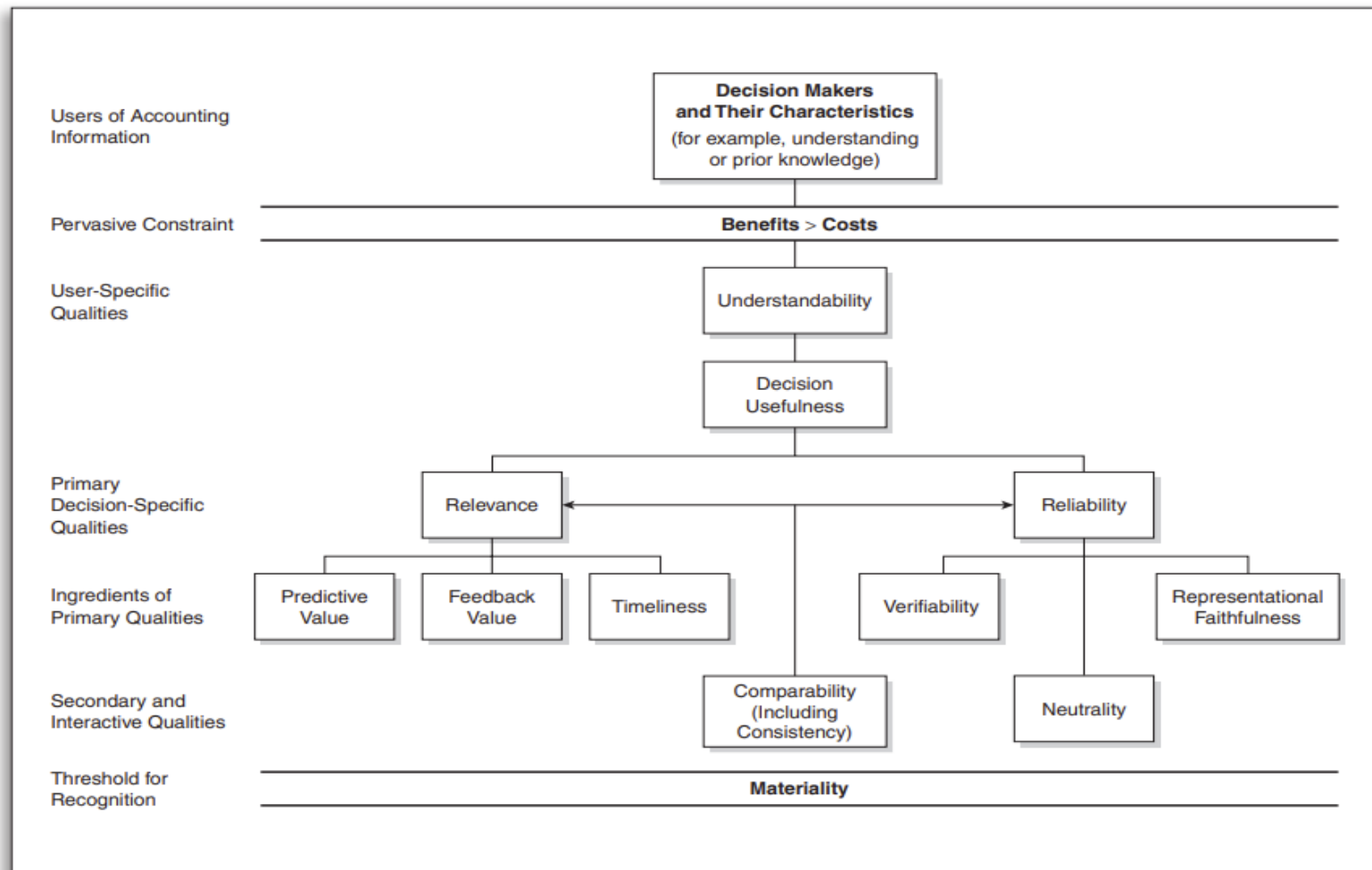
SOURCE: FASB Concepts Statement No. 2, *Qualitative Characteristics of Accounting Information*, page 15. FASB material is copyrighted by the Financial Accounting Foundation, 401 Merritt 7, Norwalk, CT 06856, USA, and is reproduced with permission.

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Topic 1.2: The Financial Functions in Excel

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Tuesday / Friday: 01:00pm -03:00pm
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Financial Functions

Learning Outcomes:

- Understanding and applying various financial functions essential for financial analysis and decision-making.

- Mastery of tools like compound interest, present value, future value, and annuities to evaluate financial situations.

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Financial Functions

- **Understanding Financial Functions in Excel.**

- Definition: Financial Functions in Excel are a set of pre-defined formulas in Excel that are used to carry out specific financial calculations.

- Microsoft Excel is a powerful spreadsheet software.

- Excel is packed with a suite of powerful functions, which can perform complex calculations.

- These functions are primarily used for financial modeling, financial analysis, and quantitative finance.

Financial Functions in Excel:

- **Basic Arithmetic Functions:** Excel includes standard arithmetic functions (addition, subtraction, multiplication, division) that are fundamental for financial calculations.

- **Financial Math Functions:** Functions like PMT (Payment), PV (Present Value), FV (Future Value), and RATE assist in time value of money calculations, such as loan repayments, investment valuation, and interest rate calculations.

- **Statistical Functions:** Excel provides statistical functions like AVERAGE, MEDIAN, and STDEV, which are useful for analyzing financial data and calculating measures of central tendency and variability.

Financial Functions in Excel:

- **NPV (Net Present Value) and IRR (Internal Rate of Return):**
  - Help in evaluating the profitability of an investment by calculating the net present value and internal rate of return.

- **Amortization Functions:** Functions like AMORLINC and AMORDEGRC assist in calculating the amortization of loans and assets over time.

- **Data Tables and What-If Analysis:**
  - Excel allows the creation of data tables and supports what-if analysis, enabling users to model different financial scenarios and assess their impact.

1. **Conditional Functions:**

   1. Functions like IF and nested IF statements are useful for incorporating conditional logic into financial models.

Financial Functions in Excel:

- **Solver:**

  Solver tools enable users to set a specific goal and find the input values required to achieve that goal.

  Solver is particularly useful for optimizing financial models.

- **Currency and Financial Formatting:**

  Excel provides various formatting options to display financial values in different currencies, percentages, or accounting figures, enhancing the presentation of financial data.

- **Built-in Financial Templates:**

  Excel offers pre-built financial templates that cover a range of scenarios, making it easier for users to create professional-looking financial reports and statements.

The main roles of Financial Functions:

- Calculation of loan payments and interest rates.

- Financial modeling and forecasting.

- Managing transactions and reporting.

- Tax calculation.

- Investment evaluation:
  - Future Value function (FV)
  - Present Value function (PV)
  - Net Present Value function (NPV)
  - Internal Rate of Return function (IRR)
  - Payment function (PMT)

The Role of Financial Functions in Accounting

- Accounting involves the application of accounting standards, the creation of complex financial statements, and detailed financial analyses.

- Accounting standards refer to the set of guidelines and rules that companies must follow when reporting financial data.

- Accounting processes such as depreciation calculation, the reconciliation of financial statements, asset valuation, and auditing become much more efficient and accurate with financial functions.

  - IAS 16 Property, Plant and Equipment.

- Others include advanced financial modeling, budget preparation, cash flow forecasting, and variance analysis.

Features of Financial Functions in Excel:

- Their precision: Financial functions can provide very accurate results.

- Efficiency: They help with rapid financial analysis and calculations.

- Complexity: They can handle complex financial calculations.

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Financial Modelling.

- Financial modeling is the process of forecasting the financial performance of a company for various use cases, such as valuation analyses.

- Financial modeling requires understanding the historical financial data of the company, operating drivers, and relevant market data on comparable companies in the same (or adjacent) industry.

- The objective of financial modeling is to analyze the underlying company to determine the core components of its business model and value drivers.

- **Financial models**
  - ✓ 3-Statement model
  - ✓ Discounted cash flow (DCF) analysis,
  - ✓ comparable company analysis (CCA),
  - ✓ Merger model (accretion/dilution analysis),
  - ✓ Capital Budgeting Model (Capital Investment Model)
  - ✓ Lender Model (Credit Risk Analysis)

Types of Financial Models.

Type of Financial Model	Description
3-Statement Model	• The 3-statement model projects the operating and financial performance of a company using historical data, relevant industry data, and management guidance, among others. • The forecasted financial statements include the income statement, balance sheet (and supporting B/S schedules), and cash flow statement.
Discounted Cash Flow (DCF) Model	• The DCF model is a method to estimate the intrinsic value of a company by projecting the free cash flow (FCF) generation of a company and discounting the FCFs to the present date using an appropriate discount rate.
Capital Investment Model	• A capital investment model is used as part of a capital budgeting analysis, where metrics such as the net present value (NPV), internal rate of return (IRR), and payback period are computed to decide whether to proceed with a project or not. • To determine if a project is worth pursuing from an economic perspective and to guide their long-term strategic plans to achieve growth and scale.
Lender Credit Model	• Credit models are used by lenders to perform credit risk analysis on a specific borrower and request for debt capital. • The credit model estimates the debt capacity of the borrower, gauge the risk of default, and determines the appropriate amount of debt to offer (i.e. debt sizing) based on the borrower's risk profile. • Sets the terms appropriately, i.e the interest rate, based on the risk undertaken by the lender.