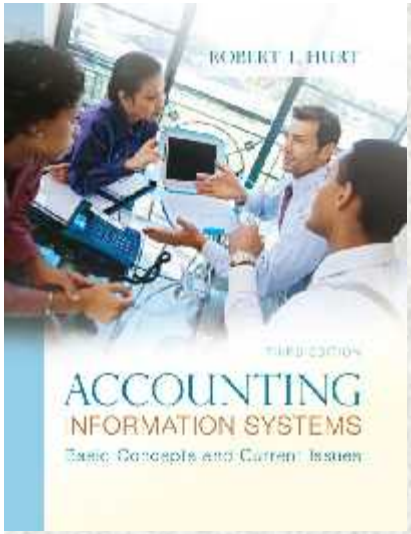

Chapter 5

Information Systems Concepts

Outline

- Expected outcomes
- Importance in AIS
- Systems development life cycle
- Capability maturity model
- IT selection for the AIS

Expected outcomes

- List and discuss, in order, the steps in the systems development life cycle.
- Explain the advantages and disadvantages of using the SDLC.
- Apply the SDLC in accounting contexts.
- List and discuss the levels of the capability maturity model.
- Classify organizations' processes according to the CMM.
- Explain factors managers should consider when choosing IT for an AIS.

Importance in AIS

- AIS is a “subset” of an organization’s management information system.
- Such systems are increasingly integrated in practice through ERP and other technologies.
- AIS is interdisciplinary at its core.

Systems development life cycle

- One good way to develop and implement an information system
- Widely used in both AIS and MIS

- Seven steps
  - Initiation / planning
  - Requirements analysis
  - Design
  - Build
  - Test
  - Implementation
  - Operations and maintenance

Systems development life cycle

- Advantages
  - Structure
  - Ability to replicate
  - Frequent user input
  - Documentation requirements
  - Often able to handle more complex projects than other development models
  - Strong control
- Disadvantages
  - Cost
  - Time
  - Tendency toward unnecessary project expansion because of user input
  - Rigidity

Systems development life cycle

- Let's consider an example of how the SDLC would work for an AIS project.

- Initiation / planning
  - A manager identifies a need to track the condition and maintenance of fixed assets more closely.
  - A feasibility study is conducted; the project is determined to be feasible.

Systems development life cycle

- Requirements analysis

  Through interviews, observation, flowcharts and other tools, the development team determines what the system should be able to do.

Systems development life cycle

- Design

  Developers begin thinking about how the system will look in terms of:

  - Documents (paper and electronic)
  - Database structure
  - Internal controls

- Build

  Armed with the design specifications, designers create an initial version of the system. They may also choose to buy something “off the shelf.”

Systems development life cycle

- Test

  Designers seek feedback on the initial build from users. They make modifications based on that feedback.

- Implement
  - The system “goes live.”
  - Three choices
    - Parallel implementation
    - Direct cutover
    - Modular

Systems development life cycle

- Operations and maintenance

  The system is reviewed and modified over time as information needs change and / or better technology is available.

- **Lecture break 5-1**

  Do an Internet search for other systems development methodologies. You might also ask an IT professional or look in an MIS textbook.

Capability maturity model

- A taxonomy for talking about the sophistication and status of an organization's business processes
- First developed by Watts Humphreys as a way of evaluating federal government contractors
- Five levels

Capability maturity model

- Chaotic
  - Processes are unstable and not cohesive
  - Key words
    - "Whatever way seems best"
    - "Does not discuss with others"
- Repeatable
  - Involves some planning
  - Often yields consistent results over time
  - Key words

    Schedule and goals

    specific to an individual

    project

Capability maturity model

- Defined
  - Standards and procedures derived from broader organizational standards
  - Key words
    - Procedures manual
    - Organizational culture
    - Discussions with others
- Managed
  - Processes are both defined and measured.
  - Key words
    - Metrics
    - Variances

Capability maturity model

- Optimized
  - Attitude of continuous improvement
  - Key words
    - Periodic discussions of process quality and ways to improve
    - Involvement throughout the organization

Capability maturity model

- **Lecture break 5-2**
  - Ann developed a spreadsheet to track fixed asset maintenance records, but did not share it with anyone else.
  - Which CMM level characterizes Ann's process?
  - Suggest two actions Ann should take to move the process through the remaining levels of the CMM.

IT selection for the AIS

- Technology is not the system; technology is a tool.
- Nevertheless, IT is often an important element of the AIS.
  - General ledger software
  - Spreadsheets
  - Relational databases
  - ERP systems

IT selection for the AIS

- Macro-level factors to consider
  - Need
  - Strategic fit
  - Personnel involvement
  - Financing
- Micro-level factors to consider
  - Cost
  - Adaptability
  - Training
  - Vendor reliability

IT selection for the AIS

- Weighted rating technique
  - Provides a quantitative guide for IT selection
  - Three stages
    - Select and weight factors.
    - Select and rate software.
    - Calculate weighted score.
  - Weighted scores **guide** the decision; they should not **dictate** the decision.

IT selection for the AIS

Factors and weights	
Price	3
Ease of use	5
Training availability	4

Packages and ratings

	Price	Ease	Training
Package A	8	9	6
Package B	10	7	9
Package C	7	9	8

Weighted scores	
Package A	93
Package B	101
Package C	98

Classroom assessment

- In this lecture, we've examined the following topics:
  - Systems development life cycle
  - Capability maturity model
  - IT selection for the AIS

- Work with a group of three to five students to discuss one of the questions on the next slide.

Classroom assessment

- During which SDLC phases would you use the weighted rating technique?
- Does the use of the SDLC always indicate an organization's processes are at a certain CMM level?
- What additional information would you need to establish a relationship between the use of the SDLC and the CMM level of an organization's processes?