Introduction to Accounting Information Systems

- Appreciate the complex, dynamic environment in which accounting is practiced.
- Relationship between the Accounting Information Systems and the organization’s business processes.
- Attributes of quality information.
- Components of an information system
- How information is used for different types of decisions and at various levels in the organization.
- How the information system supports the management function.
- Role of accountant in relation to the current environment for the AIS.
Tools of Trade
Sarbanes-Oxley Act of 2002

Implications for both public and private accountants:

Section 404 (as modified by PCAOB Auditing Standard No. 5) –

- Management must identify, document, and evaluate significant internal controls.
- Auditors must report on the effectiveness of the organization’s system of internal controls.
Sarbanes-Oxley Act of 2002...

Implications for both public and private accountants:

Section 409 –

- Requires disclosure to the public on a “rapid and current” basis of material changes in an organization’s financial condition.
CICA 2009 Top Ten IT Issues

1. Maintaining adequate controls during the recession
2. Maintaining security over moving data
3. Lack of effective IT governance
4. Coping with information overload
5. Impact of IFRS on Information Systems
6. Green computing
7. Security requirements of the Payment Card Industry
8. Malicious activity by laid-off employees
9. Role of Web 2.0 applications in organizational information systems
10. Shortage of IT skills
Business Environment

The Company

- Objectives
- Strategies
- Measurements
- People
  - Capital
  - Technology
- Value Chain
- Products
- Structure

Industry

- Competitors
- Technologies
- Economic Forces
- Customers

AIS 405: Lecture 1
Porter’s Value Chain

VALUE

- Firm Infrastructure
- Human Resource Management
- Technology Development
- Procurement

COST

- Inbound Logistics
- Operations
- Outbound Logistic
- Marketing & Sales Logistic
- Service

MARGIN

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KNOWLEDGE
Database

PROCESS
Information Processing
Business Rules, Procedures

INTERFACE
Input, Output
Location, Security

BUSINESS CONTEXT
Business Data
Business Users

BUSINESS DRIVERS
BPR, CRM,
SCM, e-Biz, etc.

TECHNOLOGY DRIVERS
ERP, Object, Mobile,
Collaborative, etc.

AIS 405 : Lecture 1
Elements in the Study of IS / AIS

- Accounting and auditing principles
- Communications
- Systems development and operation
- Management decision making
- Technology
- Databases
- Reporting
- Control
- Business operations
- Events processing

AIS 405 : Lecture 1
**System**: a set of interdependent elements that together accomplish specific objectives. A system must have organization, interrelationships, integration, and central objectives.

**Subsystem**: a part of a system. Within limits, any system or subsystem can be divided into its component parts.
Systems and Subsystems

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Systems and Subsystems...
Systems and Subsystems . . .

(a) System: 1.0
Subsystems: 1.1, 1.2, 1.3, 1.4
Interrelationships: A, B, C, D, E

(b) System: 1.2
Subsystems: 1.2.1, 1.2.2, 1.2.3
Interrelationships: F, G, H
An information system (IS) or management information system (MIS) is a manmade system that consists of an integrated set of computer-based and manual components established to collect, store, and manage data and to provide output information to users. (Gelinas et al.)
Information Technology (IT): A combination of computer technology (hardware and software) with telecommunications technology (data, image, and voice networks)

Information System (IS): People, data, processes, and information technology that interact to collect data, store, process, and provide as output the information needed to support and improve operational, tactical, and strategic activities of an organization (business).
Information Technology Vs. Information System

Combinations of hardware, software, and telecom networks use to process data

Combinations of hardware, software, and telecom networks that people build and use to collect, create, and distribute useful data in organizations (for decision making)
Functional Model of an Information System

- Input
- Processing
- Output
- Storage
- Users

AIS 405 : Lecture 1
Accounting Information System (AIS)

- **Accounting information system (AIS)** is a specialized subsystem of the IS.
- Collect, process and report information related to the financial aspects of business events.
- Often integrated and indistinguishable from the overall information system.
- Like the IS, the AIS may be divided into components based on the operational functions supported. Components are called business processes or AIS subsystems.
A business process is a set of related steps or procedures designed to produce a specific outcome.
Business Process Components

- **Information process**: portion of the overall IS related to a particular business process.

- **Operations process**: man-made system consisting of the people, equipment, organization, policies, and procedures whose objective is to accomplish the work of the organization.

- **Management process**: man-made system consisting of the people, authority, organization, policies, and procedures whose objective is to plan and control the operations of the organization.
Business Process Activities (Events)

Decision / management events -> Define & Trigger -> Operating events

Decision / management events -> Trigger -> Information events

Information events -> Trigger -> Operating events

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Transforming Data into Information
Basic System Model
Example: Architecture of A Payroll System
Information Qualities

Diagram:

- **Decision makers and their characteristics (i.e., understanding or prior knowledge)**
  - Benefits > costs
  - **Decision usefulness**
  - Understandability
  - **Primary decision-specific qualities**
    - Relevance
    - **Reliability**
      - **Ingredients of primary qualities**
        - Predictive/feedback value
        - Timeliness
        - **Validity**
        - **Accuracy**
        - Completeness
        - Verifiability
      - Comparability (including consistency)
      - Neutrality
  - **Secondary and interactive quality**
    - **Threshold for recognition**
      - Materiality

AIS 405 : Lecture 1
Key Information Qualities

- **Validity**: information about actual authorized events and objects.

- **Accuracy**: correspondence or agreement between the information and the actual events or objects that the information represents.

- **Completeness**: degree to which information includes data about every relevant object or event necessary to make a decision and includes that information only once.
Management Decision Making

- **Intelligence**: Searching the environment for conditions calling for a decision.
- **Design**: Inventing, developing, and analyzing possible courses of action.
- **Choice**: Selecting a course of action.
NOTE:
To simplify the figure, we have omitted feedback loops to each of the circles. Such feedback, of course, is an integral part of decision making and should improve the intelligence, design, and choice that occur as part of an iterative process.
Information Systems in Organization

STRATEGIC
- EXECUTIVE INFORMATION SYSTEMS

TACTICAL
- MANAGEMENT INFORMATION SYSTEMS

OPERATIONAL
- TRANSACTION PROCESSING SYSTEMS

ACCOUNTING
- FINANCE
- HUMAN RESOURCES
- PRODUCT
- SALES
- OTHERS

VALUE CHAIN

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IT/IS contributes to Business Process Reengineering / Redesign (BPR):

- **Efficient**: Do thing right (cheaper)
- **Effective**: Do right thing (better)
- **Competitive**: Do thing differently (faster/newer)
Decision-Making in an Organization

Executive Level

Managerial Level

Operational Level
Decision-Making Levels in an Organization

- **Executive Level**
  - Long-term decisions (Strategies)
  - Unstructured decisions (Competitions)

- **Managerial Level**
  - Decisions covering weeks and months (Tactics)
  - Semi-structured decisions (Effectiveness)

- **Operational Level**
  - Day-to-day / repetitive decisions (Operations)
  - Structured decisions (Efficiency)
Management Problem Structure and Information Requirements

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Structure of Decisions

- **Structured decisions:** those for which all three decision phases (intelligence, design, and choice) are relatively routine or repetitive.

- **Unstructured decisions:** those for which none of the decision phases (intelligence, design, or choice) are routine or repetitive.

- **Semi-structured decisions**

- **Risk Factors in Judgments:** No-risk, risky, high-risk Decisions
Horizontal vs. Vertical Information Flows

- **Horizontal** information flows relate to specific business events, such as one shipment, or to individual inventory items. The information moves through operational units such as sales, the warehouse, and accounting.

- **Vertical** information flows service a multi-level management function from operations and transaction processing through tactical, operations, and strategic management.
Organizational Information Systems

Executive Level
Who: Executive-Level Managers
What: Aggregate summaries of past organizational data and projections of the future
Why: Improve organizational strategy and planning
IS: Executive Information System (EIS)

Managerial Level
Who: Midlevel Managers and Functional Managers
What: Automate the monitoring and controlling of operational activities
Why: Improve organizational effectiveness
IS: Management Information System (MIS)

Operational Level
Who: Foremen or Supervisor
What: Automate routine and repetitive activities and events
Why: Improve organizational efficiency
IS: Transaction Processing System (TPS)
Operational Level

Who: Foremen or Supervisor
What: Automate Routine and Repetitive Activities and Events
Why: Improve Organizational Efficiency
Operational Level

- Day-to-day business processes
- Interactions with customers
- Information systems used to:
  - Automate repetitive tasks
  - Improve efficiency
- Decisions:
  - Structured
  - Recurring
  - Can often be automated using IS
Data Processing
• Online processing
• Batch processing

Data Input
• Manual data entry
• Semi-automated data entry (bar-code + manual)
• Fully automated data entry (bar-code)
Managerial Level

Who: Mid-level Managers and Functional Managers
What: Automate the Monitoring and Controlling of Operational Activities
Why: Improve Organizational Effectiveness
Managerial Level

- Functional managers
  - Monitoring and controlling operational-level activities
  - Providing information to executive level
- Midlevel managers
  - Focus on effectively utilizing and deploying resources
  - Goal of achieving strategic objectives

- Managers’ decisions
  - Semi-structured
  - Contained within business function
  - Moderately complex
  - Time horizon of few days to few months
Architecture

Management Information System

Input
- Transaction Processing System Data
- Other Internal Data
- Requests for Information

Process
- Management Information System Programs
- Examples:
  - Aggregation
  - Summarization

Output
- Scheduled Reports
- Ad hoc Reports
- Exception Reports
- Feedback to System Operator

Management Information System Data
Executive Level

Who: Executive-level Managers
What: Aggregate Summaries of Past Organizational Data and Projections of the Future
Why: Improve Organizational Strategy and Planning
Executive Level

- The president, CEO, vice presidents, board of directors

Decisions
- Long-term strategic issues
- Complex and non-routine problems
- Unstructured decisions
- Long-term ramifications
Architecture

Executive Information System

Input
- Internal Data: TPS, MIS, and other Databases
- External Data
- Requests for Information

Process
- Executive Information System Programs
- Summarized Graphical Delivery of Information

Output
- Executive Information System Data
- Summary Reports
- Trend Analysis
- Simulations
- Feedback to System Operator

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Information Systems
Supporting the Functional Areas

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Information Systems that Span Organizational Boundaries
Information System Stakeholders
Role of Accountant in Current Business Environment

- **Designer** — application of accounting principles, auditing principles, IS techniques, and systems development methods to design an AIS.
- **User** — participate in the AIS design process.
- **Auditor** — provide audit and assurance services.