Classification of Information systems

Adopt from Ronand Bradley (Dublin IT)
Classification of Information Systems

- Organisational Hierarchy
- Organisational Levels
- Information Systems
Types of system

- STRATEGIC LEVEL
- MANAGEMENT LEVEL
- KNOWLEDGE LEVEL
- OPERATIONAL LEVEL

Groups Served

- SENIOR MANAGERS
- MIDDLE MANAGERS
- KNOWLEDGE & DATA WORKERS
- OPERATIONAL MANAGERS

SALES & MARKETING
MANUFACTURING
FINANCE
ACCOUNTING
HUMAN RESOURCES

Information System from business perspective
Information System from business perspective

Types of system

- Strategic Level
- Management Level
- Knowledge Level
- Operational Level

Groups Served

- Senior Managers
- Middle Managers
- Knowledge & Data Workers
- Operational Managers

Horizontal information flows

Vertical information flows
Management Structures and Information Requirements

• Higher up the pyramid, the less structured the decision
  • Less defined
  • External orientation
  • More summarized information
  • Future oriented
  • Less frequent
  • Less accurate

• Lower down the pyramid, the more structured the decision
  • More defined
  • Internal orientation
  • More detailed information
  • Historical
  • More frequent
  • More accurate
Four General Kinds of IS

• **Operational-level systems**
  • support *operational managers* by monitoring the day-to-day’s elementary activities and transactions of the organization. e.g. TPS.

• **Knowledge-level systems**
  • support *knowledge and data workers* in designing products, distributing information, and coping with paperwork in an organization. e.g. KWS, OAS

• **Management-level systems**
  • support the monitoring, controlling, decision-making, and administrative activities of *middle managers*. e.g. MIS, DSS

• **Strategic-level systems**
  • support long-range planning activities of *senior management*. e.g. ESS
A Framework for IS

- Executive Support Systems (ESS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Knowledge Work Systems (KWS)
- Office Automation Systems (OAS)
- Transaction Processing Systems (TPS)
Transaction Processing Systems (TPS)

Computerized system that performs and records the daily routine transactions necessary to conduct the business; these systems serve the operational level of the organization

- TYPE: Operational-level
- INPUTS: transactions, events
- PROCESSING: updating
- OUTPUTS: detailed reports
- USERS: operations personnel, supervisors
- DECISION-MAKING: highly structured

EXAMPLE: payroll, accounts payable
## Typical Applications of TPS

<table>
<thead>
<tr>
<th>TYPE OF TPS SYSTEM</th>
<th>Sales/Marketing systems</th>
<th>Manufacturing systems</th>
<th>Finance/Accounting systems</th>
<th>Human Resources systems</th>
<th>Other types (e.g., university)</th>
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</thead>
<tbody>
<tr>
<td>Major functions of system</td>
<td>Sales management</td>
<td>Scheduling</td>
<td>Budgeting</td>
<td>Personnel record</td>
<td>Admissions</td>
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<td>Market research</td>
<td>Purchasing</td>
<td>General ledger</td>
<td>Benefits</td>
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<td></td>
<td>Promotion</td>
<td>Shipping/receiving</td>
<td>Billing</td>
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<td>Engineering</td>
<td>Cost accounting</td>
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<td>Alumni</td>
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<tr>
<td></td>
<td>New products</td>
<td>Operations</td>
<td></td>
<td>Training</td>
<td></td>
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<tr>
<td>Major application systems</td>
<td>Sales order</td>
<td>Materials resource</td>
<td>General ledger</td>
<td>Payroll</td>
<td>Registration system</td>
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<td>planning systems</td>
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<td>Market research</td>
<td>Purchase order</td>
<td>Accounts</td>
<td>Employee records</td>
<td>Student transcript system</td>
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<td>control systems</td>
<td>receivable/payable</td>
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<td>Engineering</td>
<td>Budgeting</td>
<td>Benefit systems</td>
<td>Curriculum class control systems</td>
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<td>Quality control</td>
<td>Funds management</td>
<td>Career path</td>
<td>Alumni benefactor</td>
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<td>systems</td>
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Office Automation Systems (OAS)

Computer system, such as word processing, electronic mail system, and scheduling system, that is designed to increase the productivity of data workers in the office.

- TYPE: Knowledge-level
- INPUTS: documents, schedules
- PROCESSING: document management, scheduling, communication
- OUTPUTS: documents; schedules
- USERS: clerical workers

EXAMPLE: document imaging system
Decision Support Systems (DSS)

Information system at the management level of an organization that combines data and sophisticated analytical models or data analysis tools to support semi-structured and unstructured decision making.

- **TYPE:** Management-level
- **INPUTS:** low volume data
- **PROCESSING:** simulations, analysis
- **OUTPUTS:** decision analysis
- **USERS:** professionals, staff managers
- **DECISION-MAKING:** semi-structured

**EXAMPLE:** sales region analysis
Characteristics of Decision-Support Systems

1. DSS offer users flexibility, adaptability, and a quick response.

2. DSS operate with little or no assistance from professional programmers.

3. DSS provide support for decisions and problems whose solutions cannot be specified in advance.

4. DSS use sophisticated data analysis and modelling tools.
Management Information Systems (MIS)

Information system at the management level of an organization that serves the functions of planning, controlling, and decision making by providing routine summary and exception reports.

• TYPE: Management-level
• INPUTS: high volume data
• PROCESSING: simple models
• OUTPUTS: summary reports
• USERS: middle managers
• DECISION-MAKING: structured to semi-structured

EXAMPLE: annual budgeting
Characteristics of Management Information Systems

1. MIS support structured decisions at the operational and management control levels. However, they are also useful for planning purposes of senior management staff.

2. MIS are generally reporting and control oriented. They are designed to report on existing operations and therefore to help provide day-to-day control of operations.

3. MIS rely on existing corporate data-and data flows.

4. MIS have little analytical capability.

5. MIS generally aid in decision making using past and present data.

6. MIS are relatively inflexible.

7. MIS have an internal rather than an external orientation.
Executive Support Systems (ESS)

Information system at the strategic level of an organization that address unstructured decision making through advanced graphics and communications.

TYPE: Strategic level
• INPUTS: aggregate data; internal and external
• PROCESSING: interactive
• OUTPUTS: projections
• USERS: senior managers
• DECISION-MAKING: highly unstructured

EXAMPLE: 5 year operating plan
However, the world is not that straightforward

- A single software package like Microsoft Office or even an application like Microsoft Excel could be classified as any or all of the following: DSS, TPS, MIS, or ESS (albeit, a trivial ESS, DSS, etc.)
- When considering classification, consider how the tool is used, not what it could be used for.
- A tool meets a need posed by the enterprise
- A service is provided by the tool is a solution.