Lecture 4: Transaction Processing and Management Reporting Systems

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Types of information systems

1. Transaction Processing Systems (TPS)
2. Management Reporting Systems (MRS)
3. Decision Support Systems (DSS)
4. Executive Information Systems (ESS)
5. Office Information Systems (OIS)
6. Professional Support Systems

Transaction Processing Systems (TPS)

- Transaction processing systems today generally work in on-line mode by immediately processing a firm's business transactions. A Transaction is an elementary activity conducted during business operations.
- TPS may work either in batch mode, processing accumulated transactions at a single time later on, or in on-line mode, processing incoming transactions immediately. Today, most TPS work in the on-line mode.

Management Reporting Systems (MRS)

- The objective of management reporting systems is to provide routine information to managers.
- **Scheduled Reports.** Managers receive performance reports within their specific areas of responsibility.
- These reports provide internal information rather than spanning corporate boundaries. They report on the past and the present, rather than projecting the future.
- In order to prevent information overloads, managers may resort to using demand or exception reports.
- **Demand reports** are requested when needed.
- **Exception reports** are produced only when pre-established out-of-bounds conditions occur and contain only the information regarding these conditions.

Decision Support Systems (DSS)

- Decision support systems directly support a decision-making session.
- These systems facilitate a dialog between the user, who is considering alternative problem solutions, and the system that provides built-in models and access to databases.
- The DSS databases are often extracts from the general databases of the enterprise or from external databases.

Executive Information Systems (ESS)

- Executive information systems support top managers with conveniently displayed summarized information, customized for them. They make a variety of internal and external information readily available in a highly summarized and convenient form. EIS are used to:
- 1. Monitor the performance of the organization
- 2. Assess the business environment
- 3. Develop strategic directions for the company's future

Office Information Systems (OIS)

The main objective of OIS is to facilitate communication between the members of an organization and between the organization and its environment. OIS are used to:

1. Help manage documents represented in an electronic format
2. Handle messages, such as electronic mail, facsimile, and voice mail
3. Facilitate teleconferencing and electronic meetings
4. Facilitate the use of the Internet for communication and access to information
5. Facilitate the use of task-oriented teams through the use of groupware

Professional Support Systems

- Professional support systems help in tasks specific to various professions. As both organizational and individual experience with information systems grow, more and more specialized categories of professional support systems emerge.

Transaction Processing Systems (TPS)

- A ***transaction*** is an elementary activity conducted during business operations. ***Transaction processing systems*** (TPS) process the company's business transactions and thus support the operations of an enterprise. A TPS records a non-inquiry transaction itself, as well as all of its effects, in the database and produces documents relating to the transaction.
- TPS are necessary to conduct business in almost any organization today. TPSs bring data into the organizational databases, these systems are also a foundation on which management oriented information systems rest.

Transaction Processing Modes

Transaction processing may be accomplished in one of two modes:

1. **On-line mode** - Each transaction is completely processed immediately upon entry. Database is always up to date. System has to be fast.

2. **Batch mode** - Relies on accumulating transaction data over a period of time and then processing the entire batch at once.

- Usually cyclic: daily, weekly, or monthly run cycle is established depending on the nature of the transactions.
- Easier to control than on-line processing.
- Database is constantly out of date

Typical Transaction Processing

Overall transaction processing, also known as data processing, reflects the principal business activities of a firm. The principal transaction processing subsystems in a firm are those supporting:

1. Sales
2. Production
3. Inventory
4. Purchasing
5. Shipping
6. Receiving
7. Accounts payable
8. Billing
9. Accounts receivable
10. Payroll
11. General ledger

Transaction Processing Activities

- The processing of individual transactions, of course, depends to a degree on their nature. The general elements of transaction processing include:

1. Data capture and validation
2. Transaction - dependent processing steps
3. Database maintenance

Outputs Provided by Transaction Processing Systems

Many TPSs produce transaction documents, such as invoices, purchase orders, or payroll checks. These transaction documents produced by TPS may be divided into two classes: action documents and information documents.

- ***Action documents*** direct that an action take place. Turnaround documents initiate action and are returned after its completion to the requesting agency. They therefore also serve as input documents for another transaction.
- ***Information documents*** confirm that a transaction has taken place or inform about one or several transactions. Transaction documents require manual handling and, in some cases, distribution of multiple copies. The process is costly and may lead to inconsistencies if one of the copies fails to reach its destination.

Management Reporting

- The main objective of management reporting systems (MRS) is to provide lower and middle management with printed or electronic reports and with inquiry capabilities to help maintain operational and management control of the enterprise.
  - **Characteristics of Management Reporting Systems**
    - usually developed by information systems professionals, with the use of life cycle oriented development methodologies as opposed to a rapid development by first building a simpler prototype system and then refining it in response to user experience.
    - Do not directly support the decision-making process as a search for alternative solutions to problems and the selection of the solution to be implemented.
    - Oriented toward reporting on the past and the present, rather than projecting the future.
    - Have limited analytical capabilities. They are not built around elaborate models, but rather rely on extraction of data from databases according to given criteria, and on summarization of the data.
    - Report on internal company operations rather than spanning the company=s boundaries by reporting external information.

Strategic Importance of Transaction Processing & Management Reporting Systems

- The customer driven nature of many TPSs affords some firms the opportunity to gain a competitive advantage by providing unique systems. Some of the types of information systems based on these capabilities which can be exploited for competitive effect include:

1. Tracking systems - management reporting systems that continuously track the status of a project or a product under development.
2. Locational systems - TPS that monitor the geographic location of materials or vehicles.
3. Asset management systems - TPS and MRS that maintain and report on-line the status of financial inventory, and human resources assets.