Managing Data Resources

Every organization faces different challenges when managing data resources. Some of them are still in the traditional way of saving and managing data files. As such, there are particular ways of effective use of information, depending on how data should be stored and organized. But the most important thing is the proper delivery of information. This not only depends on the computer's hardware and software capabilities but also on the ability of the organization to manage data as an important resource.

Database Management System (DBMS) is a software that allows an organization to collect and manage data efficiently. DBMS acts as an interface between data resources and application programs. Transferring from a traditional file environment into a database environment can be a costly long-term process, so it is important to understand the managerial and organizational requirements as well as the technologies for managing data.

Organizing Data

Organizing data is difficult for every organization or business. Data resources must be accurate and organized for them to be able to give the exact information. Most of the organizations realized the competitive advantage they can achieve over their competition using useful information and not just data.

Accessing the Records
- When accessing records within the database records of an organization, there are two (2) kinds of files that are accessible:
    - **Sequential File Organization** – typically used for processing the same information
    - **Direct/Random File Organization** – used with magnetic disks
- **Index Sequential Access Method** – Records are stored in the file using the primary key. An index value is generated for each primary key and mapped with the record.
- **Direct File Access Method** – It also uses primary key in combination with mathematical calculations to determine the location of a record.

Integration of Information

Coordinating the many aspects of business requires a wide variety of information from many resources. Integrating data is the first step. Most of the modern companies are increasingly based on teams and each person may be assigned separate tasks, but the work must be assembled into a final project evaluated and approved by the entire team.

A difficulty that arises when trying to integrate information is the diversity in hardware and software. For example, each software package uses its own format to store data files. As a result, there are more than 50 different formats. The problem multiplies rapidly when we consider that most of these formats change with each software revision. To integrate these different types of information, look for a software that can either read different file types or use a common format.

Role of Enterprise Resource Planning

Enterprise Resource Planning (ERP)
- It integrates business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into a single software system.
- The field is dominated by large and expensive software packages from companies such as SAP, Peoplesoft, and Oracle.
- It handles all of the financial accounting systems.
- It also emphasizes purchasing, human resource management, and investment management.
- The system uses databases, processes, and rules to provide up to the minute data on the major financial issues in a firm.
- Its primary strength is handling data for large companies operating in an international environment.

Information Systems, Organizations, and Business Processes

Organization
- It is a stable, formal social structure that takes resources from the environment and processes them to produce outputs.
- It is more stable than an informal group in terms of longevity and routines.
- Its information systems (IS) consist of data, hardware, software, telecommunications, people, and procedures (which are further discussed on the next page).

- o **Data** – input that the system takes to produce information
- o **Hardware** – the computer and its peripherals
- o **Software** – sets of instructions that tell the computer how to take data in, how to process, how to display information, and how to store data and information
- o **Telecommunications** – hardware and software that facilitate fast transmission
- o **People** – information systems professionals and users who analyze organizational information needs, design and construct IS, write computer programs, operate the hardware, and maintain software
- o **Procedures** – rules for achieving ideal and secure operations in data processing; include priorities in dispensing software applications and security measures.

Business Process
- It refers to how work is organized, coordinated, and focused on producing a valuable product or service.
- It can also be liabilities if they are based on inefficient ways of working that impede organizational responsiveness and efficiency.
- Other business processes cross many different functional areas and require coordination across departments.
- Many business processes are tied to a specific functional area. The following are examples of functional areas with business processes:
  - o **Manufacturing and production**
    - Assembling the product
    - Checking for quality
    - Producing bills of materials
  - o **Sales and marketing**
    - Identifying customers
    - Making customers aware of the product
    - Selling the products
  - o **Finance and accounting**
    - Paying creditors
    - Creating financial statements
    - Managing cash accounts
  - o **Human resources**
    - Hiring employees
    - Evaluating employees' job performance
    - Enrolling employees in benefits plans

Management Information Systems (Laudon K. C. & Laudon J. P., 2017)

The field of **management information systems (MIS)** tries to achieve this broader information systems literacy. MIS deals with behavioral issues, as well as technical issues surrounding the development, use, and impact of information systems used by managers and employees in a firm.

There's a whole new world of doing business using new technologies for managing and organizing. What makes the MIS field exciting is the continuous change in technology, management, and business processes. With this, five (5) changes are of high importance in MIS:

- **IT innovation** – A continuing stream of information technology innovation is transforming the traditional business world. Examples include the emergence of cloud computing, the growth of mobile digital business platforms based on smartphones and tablet computers, Big Data, and business analytics, and the use of social networks by managers to achieve business objectives.

- **New business models** – The emergence of online video streaming services like Netflix, Apple TV, Amazon's Prime Video, and many others for downloading video has forever changed how premium video is distributed and created.

- **E-commerce expanding** – E-commerce is changing how firms design, produce, and deliver their products and services. It has reinvented itself, disrupting the traditional marketing and advertising industry and putting major media and content firms in jeopardy.

- **Management changes** – The management of business firms has changed: With new mobile smartphones, high-wireless Wi-Fi network, and tablets, remote salespeople on the road are only seconds away from their managers' questions and oversight. In other words, business is going mobile along with consumers.

- **Changes in firms and organizations** – New, fast-going 21st-century business firms put less emphasis on hierarchy and structure and more emphasis on employees.

Information Technology in Organization

Information Technology (IT) has become a vital and integral part of every business plan, from multi-national corporations that maintain mainframe systems and databases down to small businesses that own a single computer.

The organizational structure of the IS function within a company and the distribution of IS specialists are designed to meet the changing strategies of a business. The form of an IT organization depends on the managerial philosophy and business/IT strategies formulated during the strategic planning process.

Information System and Strategy

Strategy is described as the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and allocation of resources necessary for achieving these goals.

Information Systems and Business Strategy
- Leveraging technology in the value chain – Areas of the organization most affected by leveraging technology are producing the product, getting it to the stores, and making the customer happy.
- Information system products and services

Use of Systems for Competitive Advantage
Using IS to beat the competition and increase the value of a product is not easy. It requires changing the processes and methods that probably have been in the organization for a long time. The responsibility for successfully developing and then using an integrated IS will usually fall on the managers throughout the organization.

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