Data and Knowledge Management

Few business professionals are comfortable making or justifying business decisions that are not based on solid information. This is especially true today, when modern information systems make access to that information quick and easy. For example, we have technology that formats data in a way that managers and analysts can easily understand. Consequently, these professionals can access these data themselves and analyze them according to their needs, using a variety of tools. The result is useful information. Executives can then apply their experience to use this information to address a business problem, thereby producing knowledge. Knowledge management, enabled by information technology, captures and stores knowledge in forms that all organizational employees can access and apply, thereby creating the flexible, powerful "learning organization." Clearly, data and knowledge management are vital to modern organizations.

But, why should you learn about them? The reason is that you will play an important role in the development of database applications. The structure and content of your organization's database depends on how users (you) define your business activities. For example, when database developers in the firm's MIS group build a database, they use a tool called entity-relationship (ER) modeling. This tool creates a model of how users view a business activity. When you understand how to create and interpret an ER model, then you can evaluate whether the developers have captured your business activity correctly. Keep in mind that decisions about data last longer, and have a broader impact, than decisions about hardware or software. If decisions concerning hardware are wrong, then the equipment can be replaced relatively easily. If software decisions turn out to be incorrect, they can be modified, though not always painlessly or inexpensively.

Database decisions, in contrast, are much harder to undo. Database design constrains what the organization can do with its data for a long time. Remember that business users will be stuck with a bad database design, while the programmers who created the database will quickly move on to their next projects. This is why it is so important to get database designs right the first time—and you will play a key role in these designs. Relational databases store data in flat, two dimensional tables, consisting of rows and columns. When you know how data are stored in these tables, then you know what types of data are available for analysis and decision making. Of course, your familiarity with data warehouses will serve the same purpose. Also, understanding relational databases will help you work with database developers in defining a new database or suggesting improvements to an existing one. It is one thing

for you to say to a database developer, "I wish I could get this information from the database." It is quite another thing to say, "If you could add this column of data to Table A and this other column of data to Table B, then I could get this information from the database." An important note: Don't be concerned that database developers will be insulted if you provide such detailed instructions. They actually enjoy responding to specific, knowledgeable requests from users! In addition, you might want to create a small, personal database using a software product such as Microsoft Access. In that case, you will need to be familiar with at least the basics of the product

Managing Data

All IT applications require data. These data should be of high quality, meaning that they should be accurate, complete, timely, consistent, accessible, relevant, and concise. Unfortunately, the process of acquiring, keeping, and managing data is becoming increasingly difficult. The Difficulties of Managing Data Because data are processed in several stages and often in multiple locations, they are frequently subject to problems and difficulties.

Managing data in organizations is difficult for many reasons. First, the amount of data increases exponentially with time. Much historical data must be kept for a long time, and new data are added rapidly. For example, to support millions of customers, large retailers such as Walmart have to manage petabytes of data

There are two additional problems with data management: Big Data and data hoarding.

Data Governance

To address the numerous problems associated with managing data, organizations are turning to data governance. Data governance is an approach to managing information across an entire organization. It involves a formal set of business processes and policies that are designed to ensure that data are handled in a certain, well-defined fashion. That is, the organization follows unambiguous rules for creating, collecting, handling, and protecting its information.

The objective is to make information available, transparent, and useful for the people who are authorized to access it, from the moment it enters an organization until it is outdated and deleted. One strategy for implementing data governance is master data management.

Master data management is a process that spans all organizational business processes and applications. It provides companies with the ability to store, maintain, exchange, and synchronize a consistent, accurate, and timely "single version of the truth" for the company's master data