ARTICLE 3

Enterprise Resource Planning (ERP)

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In this article, we will give a brief overview of Enterprise Resource Planning (ERP) systems.

An "integrated information system" refers to a system in which data within one system is shared by multiple functional areas of the organization that is using the system. Functional areas in a corporate organization are marketing, sales, human resources (HR), and so on. Any database that stores data in a nonredundant fashion and that is available for use by different functional areas constitutes an integrated information system.

ERP system is a term used in industry to describe a *premade*, integrated (multifunctional) corporate information system. ERP systems are designed, created, and sold by ERP vendors (such as SAP or Oracle). A company that purchases and installs an ERP system populates it with its own data.

From a database point of view, an ERP system is a premade database with multiple premade front-end interfaces intended for various groups of users. The idea behind the ERP concept is to create an empty database whose tables and columns are designed to capture the data used by the various groups of constituent users of a typical corporation. The ERP database is accompanied by a number of different modules containing front-end applications accessing the tables created for different groups of users. Figure 1 shows a high-level view of ERP system architecture.

The modules available in a typical ERP system reflect the departmental and organizational structure of a typical corporation. For example, an ERP system may contain the following modules:

- human resources (HR) module
- finance and accounting module
- sales module
- marketing module
- manufacturing module
- other modules

Figure 1 illustrates an ERP system with a number of available modules.

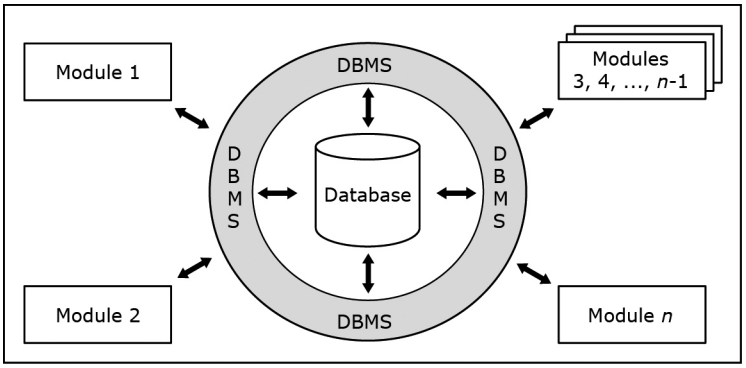

Figure 1 ERP system.

When a company purchases and installs an ERP system such as the one shown in Figure 2, it populates the premade tables in the ERP database with its own data pertaining to HR, finance/accounting, sales, marketing, manufacturing, and so on. If certain data pertains to more than one department, it is still stored only once and then accessed by multiple modules. For example, the data about customers is stored once in the central database but it may be accessed by multiple modules, such as the sales module, marketing module, and finance and accounting module.

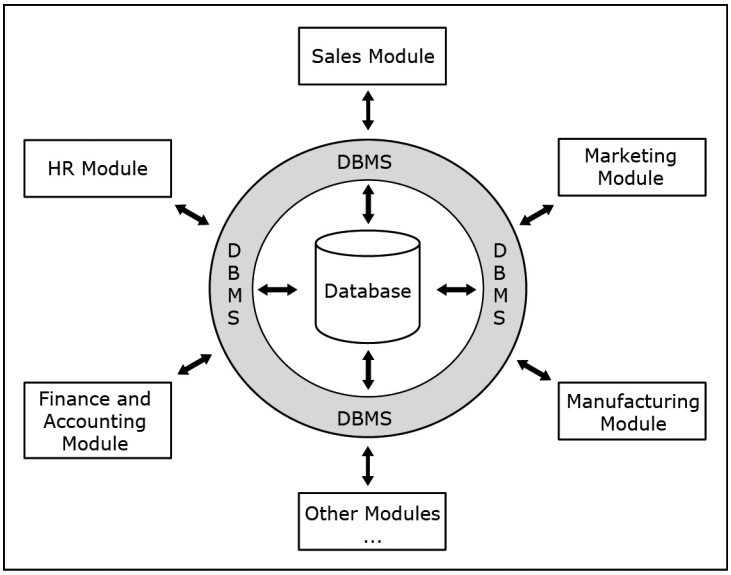

Figure 2 Various modules available in a typical ERP system.

When a company purchases an ERP system, it does not have to buy and install all the available modules. Instead, an ERP system can be initially configured with one or a few modules, while additional modules can be added later if and when needed.

ERP systems are typically bought by a corporation to facilitate processes that are uniform across industries. For example, an HR module within an ERP system contains the front-end applications that access the columns and tables in the ERP database that accommodate the data used in standard HR processes and procedures, such as recruiting, hiring, and payroll. During the process of designing the HR module and the HR portion of the ERP database, the ERP vendor uses the knowledge and experience of HR experts in order to account for and facilitate all typical HR functionalities in a professional manner. Other modules within the ERP system implement other standardized processes and are created in the same fashion.

An ERP system is designed to reflect the best industry practices of the particular business process. In cases where a company has acquired an ERP system but has a business process

that differs somewhat from the way it is implemented by the ERP system, that company has the option to modify its operations to match the best practice embedded in the ERP system, to make allowable adjustments to the ERP system to match company's practice, or some combination thereof.

Not all business processes within corporations are standardized business processes. Many of the processes in successful companies are original, especially the processes that create or add competitive advantages. The details of such processes are usually closely guarded secrets that are completely unavailable to ERP vendors. Database tables and modules that support nonstandardized processes are not available in ERP systems. For such processes, corporations have to develop their own databases and front-end applications. Therefore, companies cannot rely on ERP systems to fulfill all their information system needs.

The ERP databases and modules standardize every process in a certain way, and that particular way may not be the way that a company prefers to store and use the data for that process. Some companies use ERP systems to facilitate some or all their standardized processes, while other companies choose not to use ERP systems at all.

Purchasing and implementing an ERP system may appear to be a simple and straightforward undertaking. However, the deployment time for an ERP system can span a number of months (and even several years), and many ERP projects end in failure. One of the main causes for ERP system implementation failure is the client's lack of up-front detailed examination of the ERP system and comparison with their own business processes. This can result in a poor fit between the capabilities of the ERP system and the needs and practices of the company that purchased it.

It is also important to note that ERP systems force an organization to adapt to the ERP, not the other way around. The needed adjustments are not always smooth (even when they represent an improvement from existing practices) and can lead to friction and resistance within the organization.