

E-business Integration: ERP systems

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A major buzzword nowadays, e-business represents the new trend of the business. In order to become or to remain competitive as a business in the industry or in another field of activity, all the businesses have to become "e".

An important part of a true e-business is made of so-called ERP systems. It is very important for the businesses in our country to understand the concepts and terms of e-business and to start applying them. If most of the foreign representatives of the enterprise companies in our country already use such systems (to integrate the business in Romania with their head corporate) it is time for our domestic companies to start use the new technologies we can find in e-business integration. This article offer a short but concise perspective about ERP systems used today in e-business all over the world.

Keywords: e-business, ERP systems.

E-business basics

First of all, a few words about e-business: a buzzword nowadays, e-business is most about business. But a superior business, integrated with the new digital technologies brought to us by the IT&C (Information Technology and Communications) industry in the new Internet era.

The integrated e-businesses nowadays include:

- Supply Chain Management (SCM) systems;
- Customer Relations Management (CRM) systems;
- Enterprise Resource Planning (ERP) systems;
- E-procurement systems;
- E-market systems (e-commerce).

We will focus in this article on the ERP systems, which are integrated e-business systems dedicated to improve the concept of business and the digital integration of the businesses in the new terms of the businesses today.

Enterprise Resource Planning basics and short history

While ERP had its origins in manufacturing and production planning systems, the scope of ERP offerings expanded in the mid-1990's to include other "back-office" functions such as financial management,

asset management, order management and human resources management.

Enterprise Resources Planning represent the latest phase in over 40 years of evolution of business management techniques integrated with digitization. Up through the 1960's, business had to rely on traditional inventory management concepts, Reorder Point (ROP) and Economic Order Quantity (EOQ) being the most commonly known. The next evolutionary phases were: Material Requirements Planning (MRP), Closed Loop MRP (Capacity Requirements Planning) and Manufacturing Resource Planning (MRP II) developed from the 1970's.

In the 1980's, the concept of Manufacturing Resources Planning (MRP II) evolved as an enhancement to MRP and Closed Loop MRP by integrating other manufacturing company's resources, particularly shop floor, accounting and distribution management. In the 1990s, MRP II was further extended to cover areas like engineering, finance, human resources, project management, etc. (the comprehensive breadth of activities within any business enterprise).

Therefore, the new acronym ERP was coined to reflect the fact that these computerized systems had evolved well beyond their origins as inventory transaction and cost accounting systems. The range of

functionality of ERP systems has further expanded in recent years to include more applications, such as grants management, marketing automation, electronic commerce, student systems and supply chain systems.

ERP definition

APICS^{*} defines ERP as follows: “An accounting-oriented information system for identifying and planning the enterprise-wide resources needed to take, make, ship, and account for customer orders. An ERP system differs from the typical MRPII system in technical requirements such as graphical user interface (GUI), relational database management system (RDBMS), use of fourth-generation language (4GL), and computer-aided software engineering (CASE) tools in development, client/server architecture, and open-system portability.”

ERP concepts and functional scope

ERP systems nowadays can be seen as the backbones of e-business. All major companies run ERP systems in order to stay competitive or/and to stay in business. The old days when was dealing with immense paper work, folders, copy-machines should be gone and all the work (or, at least the majority of it) must be done using an ERP system. The relative wide spread of ERP software businesses today made the systems available not only for the big companies (enterprises) but also for small-medium ones.

ERP systems today group all traditional company management functions (finance, sales, manufacturing, human resources) and include many solutions that were formerly considered peripheral (product data management (PDM), warehouse manage-

ment, manufacturing execution system (MES), etc.). While during the last years the functional perimeter of ERP systems began an expansion into its adjacent markets, such as supply chain management (SCM), customer relationship management (CRM), business intelligence/data warehousing, the scope of this article is limited to the traditional ERP touches in the terms of finance, materials planning, and human resources.

We may say that are three major functional areas of an ERP system:

- Manufacturing & Logistics
- Finance & Accounting
- Human Resources & Payroll.

Manufacturing & Logistics (M&L)

M&L includes a wide group of applications designed for planning production, taking orders, and delivering products to the customer. The most common modules and their main functions are:

- *Operations planning* - Performs capacity (production) planning and creates a daily production schedule for a company's manufacturing plants. It involves also forecasting, production scheduling and material planning.
- *Engineering* – it is the ability to integrate at the engineering level to ensure accurate updated product information.
- *Procurement management* – It is how to control the purchasing of raw materials needed to build products, also managing the inventory stocks.
- *Order entry and processing* - Automates the data entry process of customer orders and keeps track of the status of orders.
- *Warehouse management* - Maintains records of warehoused goods and processes movement of products through warehouses.
- *Distribution management* - Arranges, schedules, and monitors delivery of products to customers via trucks, trains, and other transport means.

* **APICS—The Educational Society for Resource Management** is a not-for-profit international educational organization respected throughout the world for its education and professional certification programs. APICS' certification programs, training tools, and networking opportunities increase workplace performance. For more information, see: <http://www.apics.org/>

- *Project management* - Monitors costs and work schedules on a project-by-project basis.
- *Customer service management* – Helps administering installed-base service agreements and checks contracts and warranties when customers call for help.

Finance & Accounting (F&A)

Most common modules in F&A and their main functions are:

- *Accounts receivable* - Tracks payments due to a company from its customers. It contains tools to control and expedite the receipt of money from the entry of a sales order to posting payments received.
- *Accounts payable* - Schedules bill payments to suppliers and distributors, and keeps accurate information about owed money, due dates, and available discounts.
- *Budgeting* - Involves budgetary controls, budget accounting, budget development, and budget allocation.
- *Cash management* - Represents the capability of the system to record cash charges or deposits, recording of cash payments and receipts, cash projection reporting, calculation of expected cash uses/sources, current cash availability, etc.
- *Financial consolidation* - Enables individual business units to view their financial information, while parent companies can roll up all business subsidiaries and view the consolidated information.
- *Fixed assets* - Manages depreciation and other costs associated with tangible assets such as buildings, property, and equipment.
- *General ledger* – Helps keeping centralized charts of accounts and corporate financial balances. It supports all aspects of the business accounting process. In this module, financial accounting transactions are posted, processed, summarized, reported and also, maintaining a complete audit trail of transactions.
- *Treasury management* - Monitors and analyzes cash holdings, financial deals, and investment risks.

Human Resources & Payroll (HR&P)

HR&P involves the applications for handling personnel-related tasks for corporate managers and individual employees. The most common modules and their main functions are:

- *Human resources administration* – Provides automatization of the personnel management processes including recruitment, business travel, and vacation allotments.
- *Payroll* - Manages accounting and preparation of checks related to employee salaries, wages, and bonuses.
- *Benefits* - Handles a diverse range of benefit plans including health and medical, life and supplemental life insurance, accidental death and dismemberment (AD&D), disability plans, flexible benefits, stock plans, retirement plans, and leave plans such as vacation and sick leave accruals.
- *Self-service HR* - Lets workers change their personal information and benefit allocations online without having to send forms to human resources.

Motivation for using ERP

The scope of ERP financial functionality has been increasingly going beyond traditional transactional business functions by enabling organizations to deliver real-time performance analysis directly on the desktops of CEO's, CFO's and general business managers.

We may say that the three major reasons why companies undertake deployment of ERP applications are:

- *To integrate financial data* - As the CEO tries to understand the company's overall performance; he/she may find many different versions of the truth. Finance may have its own set of revenue numbers, while sales has another version, and the different business units may each have their own versions of how much they contributed to revenues. The ERP system creates a single version of the truth that cannot be questioned because everyone is accessing the same repository of data.

- *To standardize manufacturing processes* - Manufacturing companies-especially those with an appetite for mergers and acquisitions-often find that multiple business units across the company make the same part using different methods and computer systems. Standardizing those processes and using a single, integrated computer system can save time, increase productivity, and optimize headcount.
- *To standardize HR information* - Especially in companies with multiple business units, HR may not have a unified, simple method for tracking employee time and communicating with them about benefits and services. ERP can resolve that problem.

Conclusions

Part of an e-business integration, ERP systems remain the information backbone for contemporary manufacturing (not only) enterprises. Today's ERP systems are required to address more than the processes taking place within the walls of an enterprise. These systems must be able to address the players and processes involved in extended enterprise - the people and partners that the manufacturers collaborate and coordinate within their supply chains.

An important role of a general manager/CEO is how to select an ERP system and, after that, how to implement it in his/her business. With all the cost-cuts in the IT industry and in the ERP software business, the "E" in ERP acronym will no longer be representative of just the big enterprise. Instead of that, it will transcend the walls of the traditional manufacturing environment to encompass an extended enterprise and more and more ERP systems will be available at reasonable prices for small-medium companies.

Short glossary of e-business related terms

Capacity Requirements Planning (CRP): The function of establishing, measuring, and adjusting limits or levels of

capacity. The term CRP in this context refers to the process of determining in detail the amount of labor and machine resources required to accomplish the tasks of production.

Customer Relationship Management (CRM): Software systems that range from simple, off-the-shelf contact management solutions to high-end interactive selling suites that combine sales, marketing, and executive information tools. These include product configuration, quote and proposal management, and marketing encyclopedias. Some systems extend functions to include complex pricing, promotions, commission plans, team selling, and campaign management. Enterprise-level solutions installed at large companies with hundreds or even thousands of users have capabilities for call center/help desks, field service, forecasting, and analysis.

Material Requirements Planning (MRP): A set of techniques that uses bill of material data, inventory data, and master production schedule to calculate requirements for materials. It makes recommendations to release replenishment orders for materials. Further, because it is time-phased, it makes recommendations to reschedule open orders when due dates and need dates are not in phase.

Reorder Point (ROP) System: Inventory method that places an order for a lot whenever the quantity on hand is reduced to a predetermined level known as the reorder point.

Routing: Information detailing the method of manufacture of a particular item. It includes the operations to be performed, their sequence, the various work centers involved, and the standards for setup and run time.

Supply Chain Management (SCM): The processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier-user companies.

Warehouse Management System (WMS): Systems that integrate work performed within warehouses and distribution

centers with a transactional-type information system. Simple storage and retrieval of materials is superseded by strategies to increase throughput and productivity by managing the full range of warehouse resources to effectively manage warehouse business processes and direct warehouse activities, including receiving, put away, picking, shipping, and inventory cycle counts. Most support radio-frequency communications, allowing real-time data transfer between the system and warehouse personnel.

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