

DEVELOPMENT AND MARKET OF ERP SYSTEMS

DIANA-ELENA CODREANU, CARMEN RĂDUȚ
"CONSTANTIN BRÂNCOVEANU" UNIVERSITY OF PITEȘTI
39, Nicolae Balcescu Street, Rm. Vâlcea, Vâlcea
codreanudia@yahoo.com, c_radut@yahoo.com

Abstract

The business environment's changes occurring more and more quickly and company activities' becoming more and more complex require permanent, fast adjustments which often test human factors' abilities for efforts and analyses. The creation and development of ERP-type systems have been and are still believed to be the solutions of such challenges ensuring certain support to process large amounts of data and information needed in companies' decision-making processes.

An ERP system helps the integration of a company's set of information into a single platform due to the way in which it succeeds in combining business management techniques and practices with the new information technology, providing the transparency of data and the access to the necessary information.

Keywords: integration, information technologies, information systems, decision making, data bases

JEL classification: C80, C88

1. Introduction

We live in the information era, when the power lies in the hands of those who hold information. Thus, most companies have become aware that the right information and the proper information systems are to them the key to market success in the context of ever increasing competition.

Each person in their daily lives needs a wide range of information which is why they resort to a large number of varied information sources (the Internet, press, TV etc). In the world of business, organizations generally need information to settle the matters they face and to make decisions¹.

At present and due to business globalization, full integration has become the main goal of all organizations relating the provision of information resource management. As a result of combining data and applications into integrated entities, not only is the access to information guaranteed, but also the management of internal and external economic processes is ensured.

The new information technologies have changed the manner of business development and have generated three society's step into the digital era called "on demand business" by certain great software producers (IBM, SAP). The phrase is particularly suggestive and emphasizes the leading role of technologies².

2. Emergence and development of ERP systems

The development of ERP systems is closely connected to the amazing growth in the field of software programs and hardware components and it has passed through several major stages³.

¹ Oz, E., *Management Information Systems*, 6th Edition, Thomson Course Technology, USA, 2009

² Doina Fotache – *Information Integration in Romanian Organizations. Solutions*. Scientific Annals of "Alexandru Ioan Cuza" University of Iași, 2004/2005, volume 6, p.219

³ Rashid, M.A., Hossain, L., Patrick, J.D., *The Evolution of ERP Systems: A Historical Perspective*, Idea Group Publishing, 2002

Thus, in the 1960's a large number of companies used to perform centralized applications with own forces and therefore their design, improvement and implementation were *in-house*. Many of those applications aimed at automating their own inventory control systems and their management. Also during the period, there was a slight attempt to create the applications necessary for salaries' automatic calculations and for general accountancy. Their main programming languages used to be: FORTRAN, COBOL and ALGOL.

The 1970's were characterized by the emergence of systems used for **Material Requirements Planning (MRP)**. The applications are a set of techniques that use inventories, stock data and manufacturing program for the calculation of required materials, the launching of supplies and their provision during the manufacturing process⁴.

The 1980's meant the passage from **Material Requirements Planning to Manufacturing Resource Planning or MRP 2**. The system was conceived according to the concept of manufacturing process optimization by ensuring the timing of material requirements and manufacturing requirements⁵. Additionally, MRP 2 systems also focused on the modules of other business areas such as human resources, distribution, project management, financial planning and preparation of scenarios such as "What if".

It can be ascertained that MRP 2 was not only a manufacturing planning and monitoring system, but it was also regarded as a more complex system which progressed towards a more comprehensive one, namely **Enterprise Resource Planning**. Thus, the expansion of MRP 2 systems' capabilities led to the emergence of the first planning systems for enterprise resources called ERP in early 1990's.

ERP systems integrate all the business processes within an enterprise: manufacturing, distribution, accountancy, finance, human resources, stocks, maintenance, logistics and management.

During the coming years, ERP solution providers created and improved several modules and functions which could add to the basic modules of ERP systems, turning them into **extended ERP systems**. New concepts also appeared during the period such as Enterprise Application Integration (EAI), Business Process Integration (BPI), and Enterprise Nervous System (ENS).

The evolution of ERP systems is shown in the scheme below:

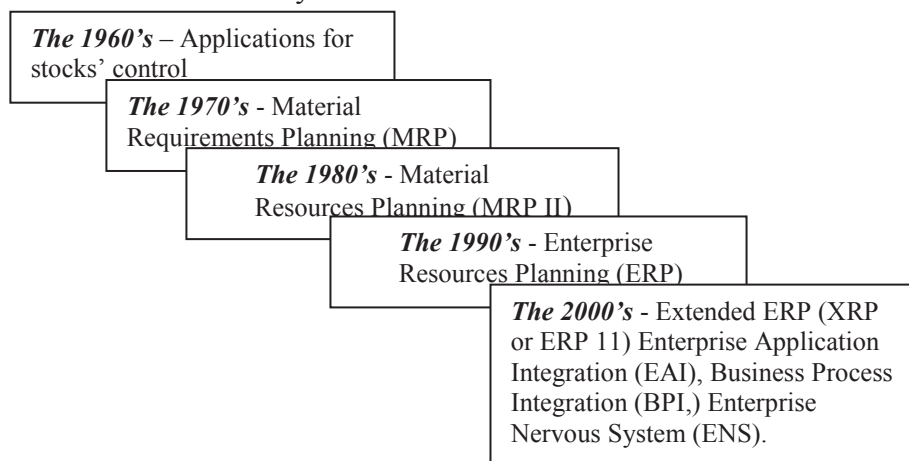


Figure 1: Evolution of integrated management applications of companies (processing and adaptation from the work of Doina Fotache and Luminița Hurbean, *Integrated Information Solutions for Business Management – ERP*)

⁴ Doina Fotache., Luminița Hurbean, *Integrated Information Solutions for Business Management – ERP*, Economics Publisher, 2004

⁵ Ion Lungu, Ana-Ramona Bologa, Vlad Diaconița, Adela Bâra, Iuliana Botha, *Integration of Information Systems*, ASE Publisher, Bucharest, 2007

3. What are ERP systems?

The full integration of business processes can take place both internally and externally. At internal level, it is the matter of a company's internal processes which can be accomplished by means of ERP packages. At external level, it is about the management of customers and suppliers which takes place by the help of management applications for customer relations (Customer Relations Management - CRM) and for suppliers relations (SCM). What should be stated is that the latter integration type cannot be performed in the absence of internal information coherence or ERP systems.

An ERP (*Enterprise Resource Planning*), "regarded as the fairest expression of interdependence between business and information technology is a multimodular software infrastructure which provides management and coordination support for various company structures and processes in order to accomplish business goals"⁶. The main objective of an ERP system (*integrated management system of business processes*) is to achieve better communication within a company, to improve cooperation and interaction among departments in terms of manufacturing planning, purchases, manufacturing, sales and customer relations.

An ERP company management system means the planning of the four major factors in successful business: human, financial, technical and resource factors (the four M's – Man, Money, Machines and Materials), according to <http://www.cio.com/research/erp/>.

Davenport T.H., one of the famous specialists in the fields of management and information systems in business, suggests the following definition of an ERP: "*a package that ensures the complete integration of all information in an organization*"⁷. The concept is illustrated in Figure 1:

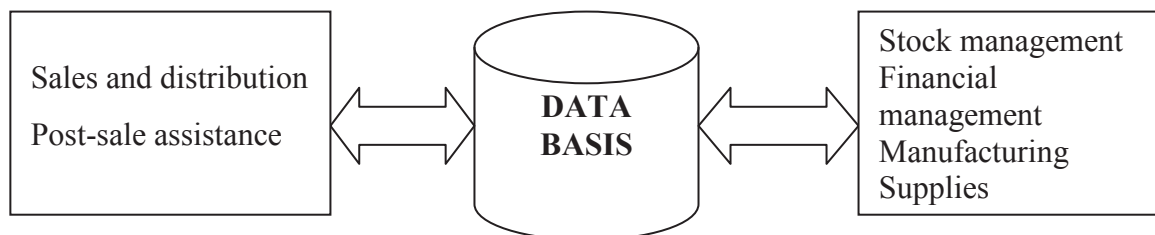


Figure 2: Conceptual scheme of an ERP system

An ERP system can be presented more easily according to two fundamental features: functionality and integration. Thus, the two features depend on each other.

Integration provides the connectiveness among business functional process flows. It is regarded as a communication technique and the means used for communication are: source code, local and extended computer networks, Internet, e-mail, workflow, automatic configuration tools, protocols, data bases. It can be mentioned that integration can be achieved by communication and communication is achieved by integration.

The *functionality* of an ERP system provides the business process flows within each function. There are a few up to hundreds of functional modules in an ERP range, such as general accountancy, debtors, salaries, stocks, supplies, manufacturing planning.

⁶ Doina Fotache., Luminița Hurbean, *Integrated Information Solutions for Business Management – ERP*, Economics Publisher, 2004, p.18

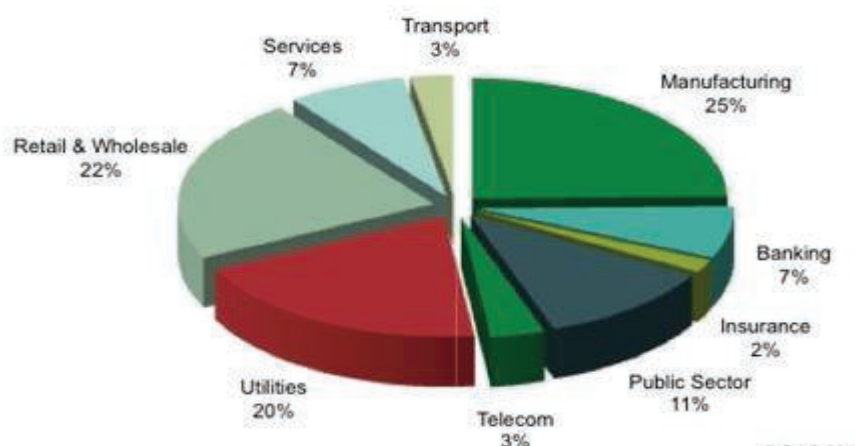
⁷ Ion Lungu, Ana-Ramona Bologa, Vlad Diaconița, Adela Bâra, Iuliana Botha, *Integration of Information Systems*, ASE Publisher, Bucharest, 2007, p.72

4. ERP market in Romania

Although the Romanian market of ERP solutions has not reached its maturity level yet, there are numerous ERP solution providers whose offers are designed both for large companies and for SME's. Solutions Factory, the first Romanian company offering consultancy for ERP product selection in Romania, thinks there are more than 70 ERP system providers.

Pierre Audoin Consultants (PAC) in Romania and Eastern Europe believe that in 2012, with only 105 million Euros spent for new ERP projects or for the maintenance of those already implemented in previous years, Romania proves to have one of the weakest inclinations in Europe, also reflecting the operation method of the economy and public administration. In accordance with the source cited herein, the local market sticks to the same values and does not seem to actually advance before 2014 under the circumstances where more mature markets than the one in Romania (Russia, Poland, Czech Republic, or even Germany and Austria) show clear evidence of their sustainable demands for ERP complex business solutions.

Graph no.1: ERP Software and Services in 2011



Source: PAC 2012 press release, <https://www.pac-online.com>

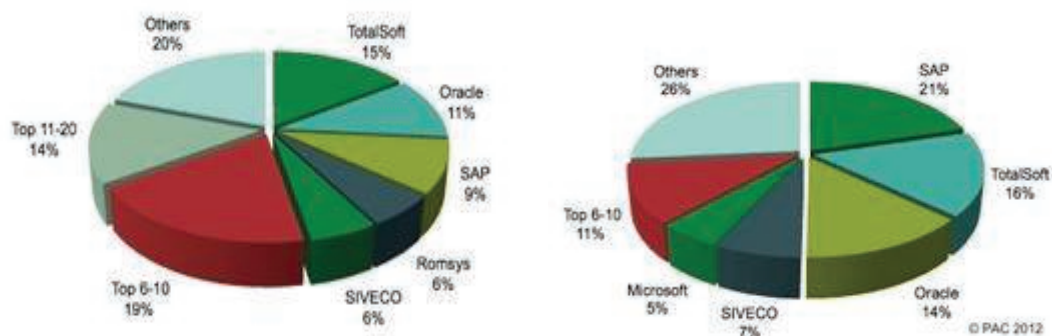
It should be noted that the public sector or state-controlled companies have not been too much concerned with ERP systems in 2012.

Whereas in most European countries public administration accelerates the adoption of ERP solutions with already developed processes and capabilities and with important references, Romania still prefers to develop specific systems sometimes in relation with general ERP modules without true references in the field. That explains the low level of modernization of Romania's public administration as well as Romania's view and ineffectiveness in Europe.

Small and medium enterprises do not have the necessary financial resources to fund serious ERP projects which they know they will need to ensure the good running of business and to increase competitiveness.

The sectors that have redirected their financial resources towards ERP solutions are the sector of manufacturing and the sector of retail and distribution given that 2011 was a severe year in terms of utility investment after many years of significant projects.

Graph no.2: ERP Software and Services in 2011 Graph no.3: ERP Software in 2011



Source: PAC 2012 press release, <https://www.pac-online.com>

According to the same survey issued by PAC, the year 2011 did not change the market leader for ERP software and services (TotalSoft) or the leader in licence sales and related maintenance (SAP). But what should be emphasized are the different approaches of the market the two players use.

Therefore, SAP, the absolute leader in business solutions at regional, European and world level, almost provides in Romania only licences of software solutions with proven references and applicability, with well-defined, optimized processes for each type of business. Thus, there is the chance for Romania's companies not only to implement management systems but also to adopt the know-how and best practices from similar market segments on mature markets.

On the other hand, TotalSoft actually reinvents itself regularly, starting from its important expertise in the development of ERP systems for many market breaches and proving commercial aggressiveness and adaptability to the particular requirements of prospective customers that attract significant decisions related to business solution investment.

The survey made by the PAC also underlines the positive change in the Dynamics solutions of Microsoft implemented by local organizations more and more often, supported by the partner ecosystem which has largely increased its maturity over the last 2-3 years.

Another aspect which is part of the PAC survey is the evolution of ERP system independent integrators. Thus, a famous name is Romsys which since 2011 has been the most important SAP partner and has ranked as the company having the most consultants for the local market. Based on its long expertise, Romsys has proven the ability of participating in one of the greatest local projects and its latest great commercial success has been the SAP system which replaces the Oracle modules at Rompetrol.

Furthermore, S&T has decreased its revenues ensuing from the integration of ERP solutions in Romania (especially from the Oracle solutions it has recently adopted), yet it remains the second largest SAP partner in Romania, providing support services to large (for instance, Petrom) or medium companies.

Table no.1: Independent ERP integrators in 2011

Rank	Company	ERP partner
1	Romsys	SAP
2	RomSoft	Oracle
3	S&T	SAP, Oracle
4	IBM	SAP
5	CSB	SAP
6	Novensys	Microsoft, Oracle
7	NESS	SAP
8	LLP	Microsoft
9	Fair Value	SAP
10	Squario	Oracle

Source: PAC 2012 press release, <https://www.pac-online.com>

Conclusions

The PAC specialists believe the next five years will bring about the growth of the ERP market and those influencing such an event will be the foreign companies that are concerned with the existence of partners able to provide complete IT solutions, methods to reorganize the energy producers in Romania or to open local management towards certain solutions meant to ensure better financial monitoring and business transparency.

As it has already been mentioned, Total Soft is one of the main local players in the IT industry in terms of the development and provision of complex business solutions and services with 17 years' expertise and 450 employees.

Although no significant improvements have occurred on the ERP market, companies are aware that a difficult economic period can be surpassed more easily when a company has all the right IT solutions to make sure its resources are managed better.

BIBLIOGRAPHY

1. Doina Fotache, Luminița Hurbean, *Integrated Information Solutions for Business Management – ERP*, Economics Publisher, 2004;
2. Doina Fotache – *Information Integration in Romanian Organizations. Solutions*. Scientific Annals of "Alexandru Ioan Cuza" University of Iași, 2004/2005, volume 4.
3. Ion Lungu, Ana-Ramona Bologa, Vlad Diaconița, Adela Bâra, Iuliana Botha, *Integration of Information Systems*, ASE Publisher, Bucharest, 2007
4. Oz, E., *Management Information Systems*, 6th Edition, Thomson Course Technology, USA, 2009
5. Rashid, M.A., Hossain, L., Patrick, J.D., *The Evolution of ERP Systems: A Historical Perspective*, Idea Group Publishing, 2002
6. ERP community of Romania www.comunitateaerp.ro
7. PAC 2012 press release <https://www.paconline.com/pictures/Press/2012/Oct/PRERPROOct12.html>
8. Solutions Factory www.consultantaerp.ro
9. Market Watch Review <http://www.marketwatch.ro>