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ENTERPRISE RESOURCE PLANNING DEPLOYMENT GUIDE

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Abstract

The deployment of an Enterprise Resource Planning system (briefly ERP) is a global project, of strategic importance for the companies. It is equally a project for the reorganization of the business processes. A guide for the deployment involves all that is necessary for the counseling for the start up of an ERP system: conceptual matters, basic rules, managers' expectations, success factors, associated risks and good practices.

Keywords: enterprise resource planning systems (ERP), ERP deployment, success factors, basic rules, ERP deployment associated risks, best practices

JEL classification: M1

1. What is ERP

ERP - an acronym about which some people already say that promises more than it does. If "Planning" is a chapter on which the ERP developers still have to work and "Resource" also has its problems, it looks like the essence of this kind of software is the third term – "Enterprise".

Thus appeared the idea to develop the so-called ERP software, which is a collection of two or more applications (also called modules) that use a unique reference (a unique database). ERP is software that manages the business processes of an enterprise and eases the communication between departments.

As defined by Reix (2002), an ERP is a software application which includes the following general characteristics:

- **An ERP is a software package:** according to CPX¹, “a software package is a coherent and independent ensemble composed of services programs, technical support, manipulation or information and documentation, conceived with a view to carrying out standard data processing, whose diffusion is now commercial and that users can use autonomously after installation and limited training” (Sourdeau & Sauzeau, 1997).
- **An ERP can be configured:** ERP was originally conceived as a standardized product to satisfy the needs of various companies. There are generally different versions per sector of activity (motor industry, banking etc.) and language. “ERPs observe the universality criteria: everybody has to work in their mother tongue and to communicate with everybody” (Mourlon & Neyer, 2002). In addition, the products are adapted to the needs of a given company through configuration (choice of the management rules, choice of processing options, choice of data format etc.). The configuration may be accompanied with the possibility to resort to specific program complements articulated around standard programs.
- **An ERP is modular:** is not a monolithic construction but a set of programs and modules that can be separated, each one corresponding to a management process: their installation and operation can be carried out autonomously. The division into modules enables users to compose a specific solution by assembly and to extend the implementation to several areas of management.
- **An ERP is integrated:** the different modules have not been designed independently: they can exchange information according to foreseen diagrams. Thus, after adding a received invoice and making the accounting entry automatically, the user can have the option to fulfill automatically the warehouse receipt and the payment of the supplier. An ERP guarantees constant integrity and perfect coherence of the data to all users, which eradicates synchronization and double capture problems.
- **An ERP is a resource management application:** it enables companies to capture their transactions (accountancy, inventories and orders management, and production programs) and propagates information where needed. However, it does not include an optimization or automatic decision program. In parallel, other software have been developed to complement ERP packages to improve certain low performance functions or to add new ones. Most of these applications concern decision support: this sort of package is then called SO-ERP or System Organized around an ERP.

¹ Created in 1973, CPX is an associative group whose aim is to bring into companies a complete service of assistance in order to evaluate and select software applications. It includes today more than 1.300 companies.

2. Managers expectations from the ERP deployment

ERP deployment is a project of a strategic importance for companies. Managers expect that the ERP deployment will create value for the company. The type of added value by exploring an ERP may be: operational, management, IT, strategic value. Briefly, we can say that managers expect form an ERP system to:

- Support business goals:
 - Integrated, on-line, secure, self-service processes for business;
 - Eliminate costly mainframe/fragmented technologies;
- Improve processes (operational and decision making);
- Increase flexibility;
- Lower Costs;
- Empower Employees;
- Enable Partners, Customers and Suppliers;
- Identify sustainable development opportunities;
- Obtain the right mix of people, processes and technology.

3. Success factors

The researches concerning the key success factors of the ERP deployment (Dumitru & Florescu, 2008) revealed the importance of four dimensions (fig. 1).

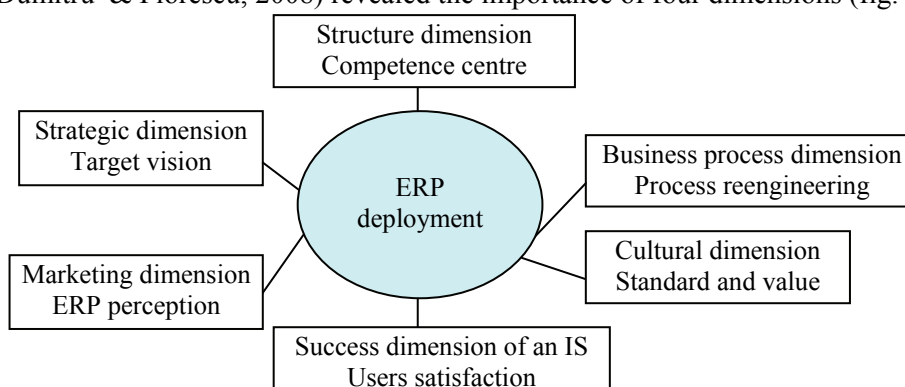


Figura 1 The dimensions of ERP deployment

Structure dimension deals with the organization and functioning of the competence centre organized by the members of the ERP project team. A competence centre brings a real added value for the projects whose life time is long and which will

evolve in time. It is also required by the size and by the costs of the project. The presence of the ERP producer is a very important guarantee for the evolution of the solution and enables a permanent competence transfer. The competence centre has to observe also the level of governance of the work process. The organization of a competence centre has to be accompanied by the definition of a service contract of performance measures. It is advisable to rely on a balanced scorecard model that allows the management of the competence centre and also the communication with the users departments.

Strategic dimension deals with the target vision of the organization (El Amrani, 2004). Within a project of an ERP deployment the definition of an organizational target vision consists of drawing clearly the big lines of the future organization and of the direction the managers have to adopt in order to reach it. This strategy of establishing a future organizational pattern conditions the phases of the project's development and this thing is transformed into the configurations of the ERP. In order to define the target vision we have to answer more questions:

- Which will be the future organization of the company using the ERP?
- Which is the organization's area involved?
- Which are the processes that have to be reengineered?
- How can you assure the coherence of the assembly (the strategic alignment)?
- A target organizational vision represents:
- A business of strategic peak of the company that involves the company's future on a medium and long term;
- A conception process of the future state desired by the company.

The expression of this potentially attractive environment reflects a positive ambition to change and a desire to make something better happen. This future imagined state will involve change efforts. The definition of a target organizational vision is a problem of strategic peak for the company that involves the future of the company on a medium and long term. The general management has to take part especially in designing the future organizational model (Besson & Rowe, 2001).

Business processes dimensions deals with the reengineering of the business processes. It has to decide on the changes of the processes ahead of the ERP deployment. The companies have to be willing to accept the best integrated practices and to model the business processes according to the ones from the system (Fui-Hoon Nah & Lee-Shang Lau, 2003). Taking into consideration the structural aspects is one of the key factors of the success of an ERP system. The ERP deployment is accompanied by a standardization of the company's internal processes.

Cultural dimension starts from the idea that the main reason for the failure of the ERP projects is that too little importance is given to the company's culture and to the effects of the process of planning and deployment. In a culture of change management, three elements are essential for the success of the ERP deployment:

- Training of the employees for assuring their competences and abilities to use the ERP effectively. We start from the idea that these are primary for a good functioning of the ERP system;
- The involvement of the users in the ERP deployment is a key factor driving the change;
- The involvement of the general management is considered one of the key factors of the success of the ERP deployment (the project of an ERP deployment has to obtain the approval and the support of the general management).

It is important for the project of an ERP deployment to become the project of the whole company: from the top management to the operational personnel.

Marketing dimensions refers to the intention of the ERP's use. In TAM (Technology Acceptance Model) was specified that the use of the information technology is determined by a behavioral intention of the use of the system, and the latter is determined by the employees attitude and by the foreseen usefulness (Legris, Ingham & Colletette, 2003).

Success dimension of the information systems refers to the satisfaction of the users in order to assure the success to the ERP deployment. The assessment of the success of the information systems is an area of interest for the research in the management of information systems (McGill, Hobbs & Klobas, 2000). In the model suggested by DeLone & McLean (1992) was proven that the success of the information systems is assessed by: the quality of the system, the quality of the information, use, customer satisfaction, individual impact, and organizational impact (fig. 2).

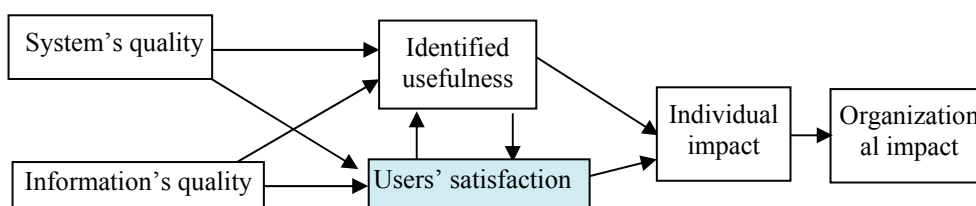


Figura 2 Success model

Source: DeLone & McLean (1992)

The satisfaction of the users is defined by & Kiew (1994) as a “net feeling of pleasure and dissatisfaction that results from the sum of all the benefits that a person hopes to receive from the interaction with the information system”. The quality of the ERP system is connected to the quality of the mere application (functions of the ERP system, use and learning options). The information quality usually consists in attributes of the quality of the information produced by the ERP,

such as: the form of information, the clarity of the information, the validity of the information, the availability of the information needed in real time, the informational content etc. the identified usefulness is defined by Davis (1989) as the degree in which a person considers that the use of a certain system increases the yield of his work.

The success model suggested by DeLone & McLean was afterwards improved, especially by adding some new dimensions: the involvement of the users and the change engineering. We consider that an ERP system is effective at the individuals' level if his users are satisfied. This level of satisfaction is determined by a good quality of the information supplied, a good usefulness identified by users and a good change engineering to be accomplished. The empirical studies conducted showed that three characteristics (system's quality, information's quality and usefulness) explain 72% of the user's satisfaction (Seddon & Kiew, 1994).

4. Basic rules

The success of the ERP deployment is first of all connected to assuming the fundamental role of the executive management and the active involvement of the functional departments of the company. We can phrase the following basic rules for the success of the ERP (Leforestier, 2008; Dumitru & Florescu , 2008):

- Integration is a reality, an information system that assures the organizational coherence can be nothing but integrated;
- Sharing the experience of another company, in order to see what other people do;
- Choosing the “integrator” according to the needs and expectations and establishing the responsibilities of the contractual parts;
- Precise formalization of the expectations, needs and objective as a “specification book”;
- An ERP is a structuring product;
- General focus of the decision making factors and future users;
- Permanent drive, driving committee reuniting all the department touched by the use of the ERP and the representative of the “integrator”;
- Avoiding the “big bang” effect;
- The equipment will change, when elaborating the budget a person will consider the “hidden costs” generated by the deployment;
- And afterwards... once the deployment is complete the company has to think about the maintenance for the future;
- E-business is an opportunity under the circumstances of using ERP systems;

- Migration from the present applications to ERP slowly and progressively (avoid a migration of the “all or nothing” kind) and using as much as possible standard data patterns, adapting the users to the new working conditions;
- Assuring the future of an ERP through a “competence centre”.

5. The risks associated to the ERP deployment

The ERP deployment projects are subject to the information application risks. There are approaches for the risks of the ERP projects that take into account their characteristics and the fact that they are equally “projects of business processes engineering”.

If the potential benefits associated to the deployment of the ERP are important the failure can also have serious incidents. According to Scott & Kaindle (2000) at least 20% of the functionalities needed at an ERP are missing from the practices of the “integrators”. Over time, excessive costs, frustrations of the employees using ERPs are frequently reported.

Bernard et al. (2002) refer to the risk exposure in the ERP deployment, to the elements of measuring and softening them. The risk exposure is calculated according to the probability of the appearance of an unwished result and to the effect of the appearance of this result. An unwished result (reduced quality of the system, over budget, over time, users’ dissatisfaction) is defined as a negative difference concerning important consequences for the company. In the vision of the risk management taking into account the risk factors and the appropriate mitigation measures, on phases of the ERP deployment (preliminary study; diagnostic of the existing system; design of the new business processes; ERP acquisition; configuration; implementation, exploration and evaluation).

6. Practical advice

Our experience in the area of ERP deployment enables us to present the following practical pieces of advice:

- There is no magic in ERP software. ERP's benefits are a direct result of effective preparation and deployment, and appropriate use. This seems obvious, but nine out of 10 companies don't get it right the first time around. Expecting a quick fix, silver-bullet solution is a dangerous mindset.
- No amount of advanced information technology can offset the problem of a flawed business strategy and poorly performing business processes. This area, in particular, is something that ERP software deployers may not fully address because it can slow system deployment.

- Define a business strategy that will give you a competitive advantage or, at the very least, make you competitively equal. Then, analyze your current business processes and develop your objectives. Once this step is done, the following steps for preparation, ERP software selection and implementation can support your strategic and process objectives better.
- Acquire flexible ERP information technology that can accommodate rapidly changing business conditions. The high-velocity flow of information needed to support action up and down the supply chain is a major step forward for most manufacturers. It will be mandatory in the future just to compete, much less stay ahead of, the competition.
- Have the deployment led by a senior executive who has the authority to make changes happen and happen quickly. Make sure there is a sense of urgency and true accountability for completing preparation and implementation of activities on time.
- Executive management should endorse the ERP project.
- Executive management should remain actively involved throughout the deployment.
- ERP software implementation responsibilities should be shared between the information technology department and functional areas where the software is being implemented.
- Policy committees involved senior management in the deployment.
- Deployment teams should consist of functional and IT people; all the departments that will have the project implemented should be represented.
- Executive management should be cognizant about the institution's ability to adapt to the organizational changes that occur when ERP software is implemented.
- A project manager should be assigned full-time to the deployment.
- Project team members' normal job responsibilities should be reassigned to other employees for the project duration.
- Employees should receive training on how to work as a team on a project before deployment begins.
- The entity should retain ownership of the deployment process.
- A separate dedicated work environment specifically created for the project team aids deployment.
- Functional and technical users should be brought to a work environment specifically dedicated to the project team and to building the system.

- All employees who will use the software should receive thorough training.
- Executive management should help employees network with peers at other institutions undergoing similar deployment initiatives.
- Conversion of data from the old software system to the new should begin early in the implementation process.

Conclusions

Passing from classic, independent applications to ERPs is a necessity imposed by the exigencies of the growth of the competitiveness and sustainable development of the companies. The deployment of an ERP is a complex process, that produces organizational expensive changes. The return on investment has to be assessed on a medium and long run and depends on a number of factors. A good practices guide can “counsel” the actors of this process. The ERP deployment has to be driven by a “Competencies centre” especially created. A special care should be allocated to the risk management on the phases of the ERP projects development.

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