

SELECTION OF AN ORGANIZATION SPECIFIC ERP

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Abstract:

Technology development and competitive conditions being changed encourages more medium and high level companies to find different solutions. The integrated software systems, starting with the use of the computers in the production sectors, turned into giant program packs, which today are named ERP. Before the use of these systems, there is a well thought selection process needed. The most important part of adopting an ERP system is the selection part where specialized consultancy is always of great help. Some companies choose to ignore this step because of the additional costs, taking bad decisions which as mentioned, can lead to significant financial losses.

Key words: ERP, multiple criteria decision making (MCMD), AHP, fuzzy

JEL classification: C81, C89

INTRODUCTION

An ERP system represents an information management system which is supposed to manage the data flow among the working modules of a company. An ERP system generally includes a shared data base and different modules and applications which are used in order to facilitate planning, production, sales, marketing, distribution, human resources, project management, inventory, data processing and information storage. ERP systems allow the company's processes to be automated thus increasing the operational efficiency.

An ERP system is always a big project both for the Client Company and technology wise. Usually there is the need of implementing new systems and integrating them with the ones already existent is the critical aspect in most of the cases. Cooperation between the company and IT is extended to a global collaboration among several companies and entities of the IT department. The success of these projects will depend upon the quality of this collaboration.

The modular software design means that companies can choose the needed modules, combine and adapt for different suppliers and add new modules in order to improve the company's activity.

Companies which started using ERP bundles such as SAP, BAAN or PEOPLESOFT did comparisons between actual ERP systems and old ones. One of the greatest disadvantages of the old systems was that it didn't benefit from an integral approach, different departments being isolated from each other. An appropriate example is the need of information for each individual department, the acquisitions department needs information from the production department, acquisition data is needed by the accounting department, etc. If all the information placed on different isolated islands are brought together in only one stable system, the results are amazing. For example, if the acquisitions department can see the production details, it can start making an acquisitions schedule. If the financial department can see the details of an acquisition as soon as it is fed into the system, it can plan ahead the cash-flow needed for that transaction.

The ERP system suppliers assign more and more resources in order to make possible the use of platforms by small and medium companies, taking into account the implementation, which can cost up to 5 times more than licensing.

Other improved aspects of the new systems include the product, configuration, electronic data exchange and online integration, which allow more users to access the system.

ADVANTAGES AND SELECTION CRITERIA

ERP systems use a varied range of software and hardware components. Because an ERP system will always be a major investment, software choice is a very important step in order to manage the needs of a business. Before choosing software, companies must decide if they need or not an ERP system.

These are the situations where such a system is needed:

- The company is affected by unknown costs
- Problems which can be solved only by certain persons
- Financial performances are unknown
- Planning and follow-up takes too much time
- Processing errors are rising
- Needed information is not easily accessible, it takes too long to create reports
- Contradictions are found among prepared reports

In order an installed ERP system to be a success, the software of choice should be the one that offers the best solutions for the company's structure, technological systems, corporation objectives and business strategy. The process is very important because any bad decision can lead to significant financial losses.

In the selection process, if it is used the analytical method, some criteria should be used, the choice being made according to them.

The most important are:

- Functionality
- Technology and Expertise (Know-how)
- Flexibility and application scalability
- Costs
- Implementing and ease of use

Among the biggest ERP system producers there are: SAP, BAAN, PEOPLESOFT, ORACLE, JD EDWARD, IBM, RAMCO, etc. These producers offer functions which slightly differ their products, main modules of the platforms being similar for all producers.

Selection, implementation of this system, business management, change management and how the system adapts to them are very important factors for an ERP to be successful. Within an organization, the ERP system implementation involves macro implementation as the strategic level and micro implementation as the operational level.

ERP is a key ingredient determining competitive advantage for efficient business operations. Choosing an ERP software as well as implementation and maintenance of this system is a very critical process, because the decision will affect the organization positively or negatively.

Therefore, in order to select suitable ERP software, we take into account the requirements of the organization, the ERP system characteristics and constraints of cost and quality criteria. ERP software selection can be seen as a multiple, multi-criteria decision (MCDM), problem which involves taking into consideration quantitative and qualitative elements in the selection process, including a set of alternatives specified by the supplier. Thus, to take a decision (MD) is necessary to take into account quantifiable

and / or unquantifiable criteria as well as other additional criteria. For decision making (MD) in qualitative evaluation we note the following issues:

- Criteria are always subjective and thus imprecise.
- Objectives are usually in conflict and, therefore, the solution is highly dependent on DM preferences. In addition, it is very difficult to develop a criterion that can accurately describe the preferences of an alternative.
- Data of ERP software must be adapted to subjective criteria of alternative adequacy for various subjective criteria expressed in linguistic terms.

For example, it is estimated that between 50% -75% of U.S. firms have some degree of failure in the implementation of these advanced technologies of enterprise resource planning. Most problems arise when the capabilities of the new technologies are incompatible with existing business processes of the organization and of application executed procedures.

Since an ERP system, by its very nature, requires a logic of organization strategy, organization and culture, it is imperative that decision-making system is a wise selection. In this respect ERP selection methodology proposes several steps, provided in Figure 1.

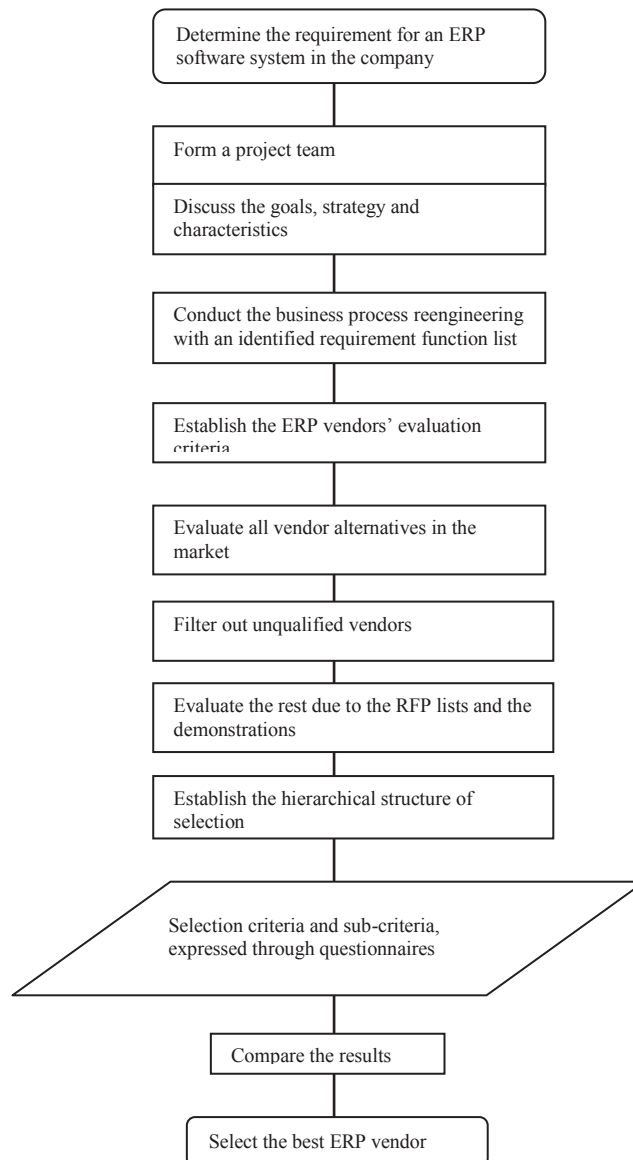


Figure 1 Proposal for selecting an ERP software vendor¹

¹ S. Onut and T. Efendigil / A theoretical model design for ERP software selection process under the constraints of cost and quality

Decision making methods are complex, each with some limitations such as: lack of expertise incoherence, semantic description, alternatives. Thus, during the evaluation and development period checks aimed consistency and in some cases the decision with the detailed evaluation.

Selecting ERP software involves taking into account a number of factors. If we consider the cost criteria, which is based on the purchase price, this price includes the license agreement, costs, and cost of goods and cost of technology consulting, involving adaptation and integration costs, support costs, training costs, maintenance costs (upgrades). Quality criteria derive from the international standard ISO / IEC 9126. Currently, ISO / IEC 9126 are widely used by researchers and practitioners to assess the quality of software. The standard for achieving software quality model defines the quality composed of six external interest attributes, namely functionality, reliability, efficiency, usability, maintainability, and portability. In turn, each of these qualities is refined into sub-attributes specified in Table 1.

Table 1 The ISO 9126 software quality model²

Characteristic	Sub-characteristic
Functionality	Suitability
	Accuracy
	Interoperability
	Compliance
Reliability	Maturity
	Fault tolerance
	Recoverability
Usability	Understandability
	Learnability
	Operability
Efficiency	Time behavior
	Resource behavior
Maintability	Analyzability
	Changeability
	Stability
	Testability
Portability	Adaptability
	Installability
	Replaceability
	Conformance

As shown in Figure 2 assessing includes four levels of hierarchy, with weights of importance.

The methodology described in this paper demonstrates selecting the best ERP system provider, considering the cost and quality constraints. The AHP technique is seen as an uncertain technique, for a useful tool for decision making to make a precise selection-making process that can help the organization in order to obtain a competitive advantage in a complex environment.

² *ibidem*

Methodological structure of an ERP project is:

- Defining the project and current needs analysis. Defining a reference point, finding out user needs and system limitations, creating a functional model for the best solution.
- Exterior design: design detail for a chosen solution, including diagrams which represent all of the programs, subroutines and data flow.
- Interior design: developing, testing, installing and software tweaking.
- Pre-implementation: evaluation and acceptance.
- Implementation: system implementation.
- Post-implementation: Functions evaluations and debugging.

Possible problems upon implementing an ERP system:

- Different architectures: SAP can have different purposes, in different sessions, on different physical servers. It has different modules such as SRM, CRM, ERP connected to themselves or other systems.
- Different operating systems: Can be installed on different operating systems, each one having different security rules (SOLARIS, LINUX, WINDOWS)
- Different data bases (ORACLE, MSSQL, DB2)
- Different versions or add-ons (SAP R/3, SAP Net Weaver 6.4, SAP ERP, SAP ECC)
- Huge amounts of customized code. Even if there is a standard matrix, it is not sufficient. Sometimes customized code represents from 40% of the ERP platform, up to 60%.

Critiques towards ERP systems

Even though most of the opinions are positive, there are still some negative opinions related to ERP systems. The biggest critique regarding these systems comes from company managers worried about the total costs for the software acquisition. These are a few of the most common dissatisfactions related to this technology:

- ERP systems are too expensive
- System implementation takes too long
- Difficult adaptation to the already existent software
- It is usually pointed towards big companies
- It needs major modifications, each client having different needs
- It usually needs a company restructuration in order to complete the process
- ERP systems raise the IT and personnel costs
- Even though ERP systems are installed, additional systems are needed for a normal use

These critiques are very important for the developers. Certainly, there are deficiencies but the important aspect is to fill in the missing parts.

CONCLUSIONS

Enterprise Resource Planning systems (ERP) were introduced to solve various organizational problems while also providing an integrated framework for storage, processing and delivering information. An ERP system is an integrated software package that consists of a set of standard functional modules (production, sales, human resources, finance, etc.) or integrated modules, developed by the vendor, that can be tailored to the specific needs of each client.

No matter the producing company, a corporate informatics system should offer solutions not only for activity coordination but for all employees, suppliers, clients and

business partners. In other words, it should be able to manage both back-office resources and front-office resources.

This study represents the developing and implementing processes of ERP systems, its advantages, disadvantages, and the aspects which developers should pay more attention to.

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