

ASPECTS OF SELECTING AN ERP SYSTEM FOR AGRIFOOD AND AGRITOURISM STUDENTS TRAINING

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Abstract

ERP systems are an important factor in modern companies' competitiveness and operation. Therefore, all college graduates should have theoretical and practical knowledge about the operation and use of this management tool. Hardening many aspects of the subjects studied is possible through examples using an ERP system.

Key words : ERP, agrifood, agritourism, life-cycle

INTRODUCTION

One of the many definitions of ERP: „A software architecture that facilitates the flow of information between all functions within a company such as manufacturing, logistics, finance and human resources.“ and another definition is : „An ERP-system is an information system, that implements business processes and rules for all main business departments inside an enterprise as well as between enterprises.” A generic model of an ERP system is presented in figure 1.

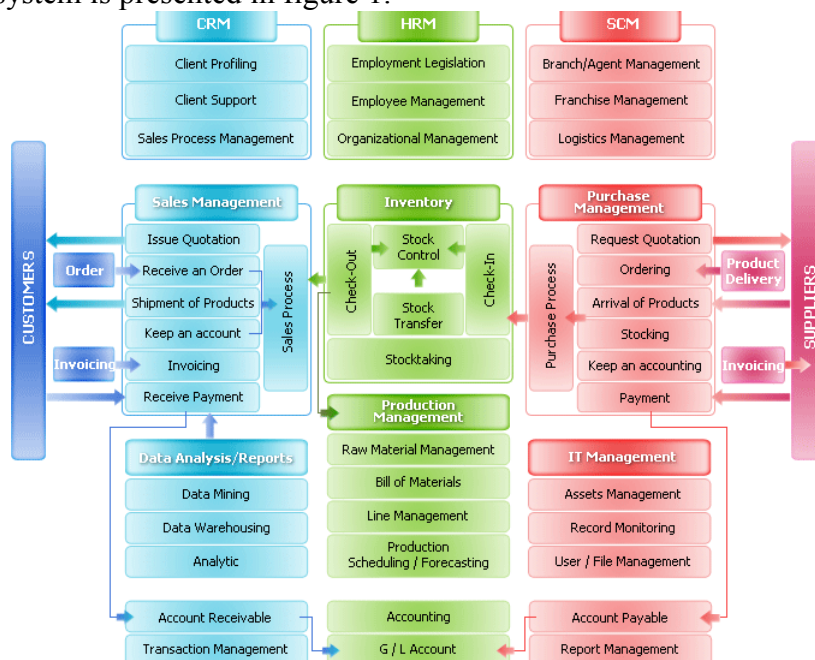


Fig. 1. Generic ERP system

MATERIAL AND METHODS

An ERP system selection methodology is a formal process for selecting an enterprise resource planning (ERP) system. Existing methodologies include fuzzy methods (FAHP - fuzzy analytic hierarchy process), Kuiper's funnel method, Clarkson Potomac method, SWOT analysis, Multiple Attribute Decision Making Methodology and Cost Effective Approach. Practically all evaluation methods rely on the application of evaluation criteria as basis for selection; based on the values obtained by the candidate software packages for each criterion, an aggregate score can be calculated, which is used for the ranking of candidates. The most used technique is AHP – Analytical Hierarchical Process, in which the criteria are structured as a hierarchy, and specific weights are defined for each level in the hierarchy.

The criteria to be used for ERP software selection, as presented in the literature, include several categories of criteria. One such structuring includes six categories : functionality (the coverage of functional requirements), technical architecture (technical requirements, including integration with existing systems), cost (both for implementation, maintenance and further adaptation / extension), service and support levels provided by the manufacturer, ability to execute and vision.

The software evaluation process uses a number of factors that can be consider in specifying the application software. These factors are : general requirements, administration and security, reporting, Web access and integration, manufacturer characterization and cost (of the software and associated support and services). General requirements are related to:

- Operating System - requirement for a particular operating system.
- Database format - requirement for a particular database system
- Data import or export – the capabilities of export or import data in/from other software packages.
- The look and feel of the application – requirements for standard windows processes and procedures?
- Filtering and searching friendliness (this applies to database software) – existence of several optional ways of finding data that the users will need.
- Look-ups – Look-ups are tables or drop down lists that offer a selection of data to choose from when using the system.
- User configurability of look-ups and lists - the lists and drop downs mentioned above to be user configurable.
- User configurability of tags and labels.
- Handling of links to ancillary information.
- Required number of concurrent users.
- Archiving requirements. - archive the data for a number of years.

- Existence of barcoding, PDAs and remote devices – if they are necessary.
- Single or multi-site functionality – the possibility that the application supports multi-site operation or it will be installed on a single site.
- Graphical, hierarchical data structure - database systems which display a graphical representation of a hierarchical structure (parent / child relationships) are generally preferred.
- Regulatory compliance support – if in user industry there are any statutory standards to which the software must comply.
- Ease of implementation – the work required to implement the software.
- Additional database software required - some applications require that licenses are purchased for additional database software.
- System maintenance required.
- Paperless systems - most applications generate paper reports or other hard copy.
- Access to data from various areas - system users may require logging on and inputting or checking data from any work station that has the application installed.
- Equipment history - display of equipment maintenance history over time should be easily achieved which is an important capability of software.
- Simple login process - login should be achieved quickly and effortlessly.
- Speed of access and response time.
- Customizable screens - allow the administrator to hide specific fields from defined users.
- Resourcing - all software applications require resources to keep them running and administer them.
- Alternative Languages – the existence of the support of alternative languages.

Administration and security requirements are related to:

- Ease of use - the application should have a useable administration module.
- Tabular selection - Many security modules offer a table of functions for which permissions can be granted to each user or group.
- Password - Users should be allocated passwords.
- Individuals and group settings – it should be possible to set up individual users ID's as well as user groups.
- Audit trail - an administration audit trail can be required, that would provide traceability to individuals for all changes to the administration and security module.
- Customization - Application customization should be easy for the administrator. For example configuration of screens and user configurable data should be intuitive and not requiring a high level of IT knowledge.

Reporting requirements are related to:

- Ease of access to reports - Reports must be easily accessed and found on

the system.

- Data export capability - Many systems provide a data export facility. For example they may allow exporting data to MS Excel.
- Customizable reports - Customizable reports allow the user to modify existing reports which is much easier than creating reports from scratch.
- Format of reports - What functionality does the application have to its handling of report output? Does it allow data to be displayed graphically?

Web access and integration criteria :

- Purchase or rent - Who owns the software? This is an important factor as some web based systems can be purchased and installed on your own Intranet. Others are rented and installed on the vendor's servers.
- Data ownership - Is there any ambiguity with respect to the ownership of the data?
- Functionality - Due to limitations in the programming of web browser based systems some of these packages have limited functionality.
- Response Speed - Is the response time of the software satisfactory?
- Company stability - a mechanism should be in place to recover the data if the vendor company is going out of business.
- Cost analysis – In case of renting web based software the cost against that of buying a web based package for installation on your Intranet should be assessed.
- Internet access - Do all the PC's in a web based system already have Internet access, and if not what will this cost?
- Customization - Web based software must often be used without customization. If this is the case, will the application meet the requirements in its standard form?

Manufacturer characterization criteria :

- Stability - each manufacturer's stability must be assessed.
- Professionalism - assess each manufacturer for the professionalism displayed in dealing with the client's inquiry and in demonstrating their products.
- Service level agreement - assess each vendor for the level of future service and support that they offer. What does it cost for the level of service that you require?
- Provision of customization - if the application will be customized, each vendor should be assessed for the service they offer in this and costs involved.
- Upgrade path - if the application is an entry level system that may be upgraded in future, assess the vendor for the upgrade path offered and cost of these upgrades.
- Customer base - how many packages has the vendor sold and who buys them?

Total costs of ownership :

- Cost of software - assess the application for total cost for the configuration and number of users required.
- Cost of hardware - the total cost of any additional hardware required to make the implementation work with the application.
- Potential future cost - assess for potential significant future costs.
- Implementation cost - installation of the software and consultancy.
- Training cost - assess for training costs involved in implementing this application.
- Cost of customization - assess the application for any costs involved in customizing it for your requirements.

For this case study, the most important criteria are : no cost for software (ERP and database software), implementation and customization.

RESULTS AND DISCUSSION

Because the main criteria are cost limitation, only ERP systems that can compete are open source. A list of most important open source ERP systems that can be called 'true' ERP, and (at least partly) freely available are Compiere, Openbravo, Opentaps, Adempiere, Postbooks, Neogia, ERP5, OpenPro, OFBiz, OpenERP. Unfortunately no system has all the functionality necessary, so it will be need to write new modules specific to the agrifood and agritourism. The following four systems are closest to the actual needs:

Adempiere is a spin-off of Compiere, the vibrant community of Adempiere took it upon itself to release a 'true' open source Compiere version. The first thing they did was to add support for an open source database – Postgresql. Then they built a passionate community around the project, offering documentation, how-to guides, consulting services and free add-on software components.

Openbravo is one of the most promising open source ERP solutions available today. It's a web-based software (running on top of Tomcat web application server), with a global network of partners. Openbravo presence is very strong in Spain and looks to become global, starting mainly with other European countries. Like other mature open source ERP solutions, they offer paid services – training, custom development and consulting. All software components are free, they support Postgresql database which is open source, run on various Linux platforms.

Opentaps are built on top of Apache OFBiz - Apache Open For Business framework. Being a young offering has its advantages – modern technologies are incorporated from day 1, while older, more mature solution might find it difficult to integrate new technologies. In Opentaps case, the

most significant advantage is using service oriented architecture – all functionally in the underling OFBiz framework is implemented using services. It's written in Java (as does OFBiz) and runs on all popular database servers, including the most widely used free, open source database.

Postbooks are the open source version of Xtuple's OpenMFG and are a C++ project. It seems to shift away from manufacturing and focus on accounting, probably as a complementary product to OpenMFG. The commercial version (OpenMFG) Xtuple can provide strong financial support to allow further development of the open source version. It is likely that OpenMFG will remain focused on manufacturing while Postbooks will evolve to an accounting oriented solution.

CONCLUSIONS

ERP importance in business management justifies the effort of implementation for students training at seminar and laboratory classes in all engineering and management profiles. Unfortunately, the hard conditions used for the study, none of the systems do not cover all requirements. Therefore the only solution is to implement an open source system and to develop through personal effort, required modules considered for agrifood and agritourism domain.

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