

SUPPORT TOOLS FOR ERP SELECTION

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Abstract: *The first step in ERP implementation is a selection process. In general ERP selection is a two-stairs process. The first task is supply narrowing and after that it follows the ERP comparison. Inasmuch as an ERP system is not only a software product, in the assessment process have to be evaluated all follow-up services too. These is true all the more, if we take new technologies platforms is consideration. In small enterprises human resources are restricted. For this reason project analyse are neglected in most of the cases and this enterprises need standard methods and services for evaluation*

Keywords: *ERP selection, ERP evaluation.*

1. Introduction

As regards information system investments two big groups can be distinguished. In the first case the computerised information system itself is the means of production or provision [8], whereas in the second one it contributes to the production process indirectly. Part of the computerised information systems applied by SME ventures belong to the first class mentioned above. However, it must be stated that the computerised information systems belonging to this class are applied by big companies or in special cases by medium-sized ventures. We can mention the food-processing industry as an example. In this case the assessment of the information system employed can be more easily performed because in such a case the income, profit growth as well as expenses, input decrease can be measured, assessed and checked up well. In the case when the computerised information system serves the venture's activity only indirectly the evaluating procedure can be applied at such points, which can be linked to countable and assessable factors [2] [13].

During our research we have been developed an Internet application for supporting ERP pre-selection process, called ERP_{Select}, and a decision support model, which is suitable for compare two or more potential ERP projects.

In this article we want to present this services and want to recite some reasons which induce this development.

2. Surveying the use of ERP in SMEs

At the beginning of 2007 a web-based survey was carried out in order to assess the use of ERP

by small- and medium-sized enterprises. The request to fill in a form reached about 900 enterprises through the help, first of all, of Nemzeti Fejlesztési Ügynökség (National Development Agency), secondly of Hajdú-Bihar Megyei Iparkamara (Chamber of Commerce and Industry of Hajdú-Bihar County) and thirdly as a result of our own activities. The National Development Agency assisted us in forwarding our request to the applicants that were awarded funds as a result of the GVOP application round. The County Chamber of Industry sent our request to fill in the form to its own members. 46% of the respondents said they had ERP systems or that the installation of such a system was underway, while 44% reported that they used independent pieces of software in their everyday activities.

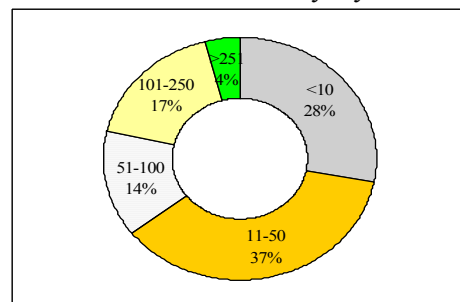


Figure 1: *Distribution of respondents by number of employers*

The distribution of the respondents by the numbers of their employees can be seen in Figure 1. As regards their sales revenues they mostly belong to small- and medium-sized enterprises (Figure 2).

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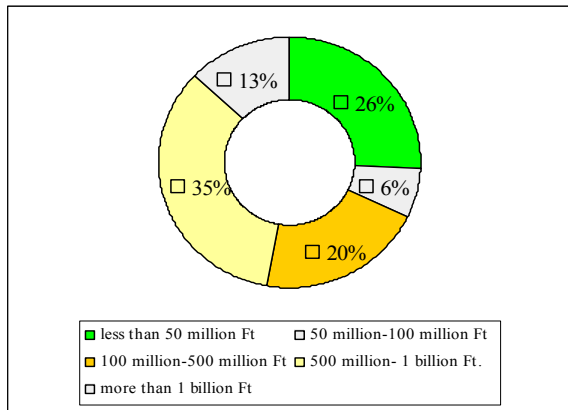


Figure 2: *Distribution of respondents by annual revenue*

Considering their main activities (Figure 3) it becomes clear that the majority of the respondents are active in wholesaling.

Considering the experience gained, it is not surprising - though has a tremendous influence on economic efficiency [3] - that in their choices of the ERP system most of the respondents obtained their systems on the basis of some recommendation (Figure 4), irrespective of whether it is ERP or individual application.

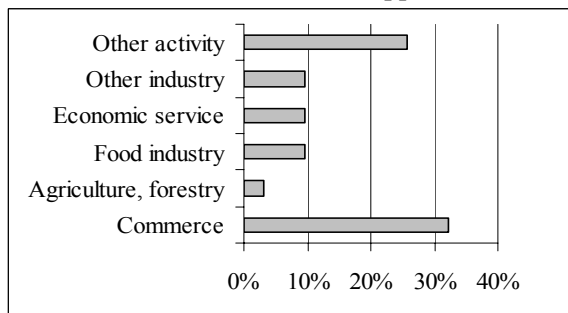


Figure 3: *Distribution of responders by scope of business*

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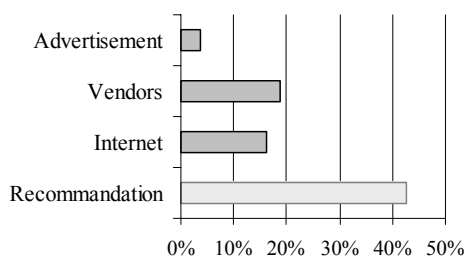


Figure 4: *Modes of ERP choice*

Among the small- and medium-sized enterprises there was only one that spoke of purchasing its ERP system by way of a tendering procedure. 71.5% of the small- and medium-sized enterprises that responded had not applied an economic or financial evaluation linked to the introduction of the system. Apart from other facts this finding indicates that when implementing a system small- and medium-sized companies are unable to provide labour or financial resources to carry out the evaluation. It has remained a task for applied research or the ones dealing in the ERP system to provide easy-to-use evaluation procedures for managers of small- and medium-sized enterprises that can be adapted to and suitable for preparing for making their decisions and verifying them in the course of implementing the ERP system.

3. ERP_{Select}, an Internet application for selection support

The data from my own survey revealed that recommendations, especially recommendations from people interested in the operation of the business, greatly influence the opinions of those wishing to implement ERP systems. In many cases it is these recommendations that mean the first selection. In my opinion the first selection should be done on the basis of the functionality of the different ERP systems. By studying different foreign sources it can be concluded that there are tools suitable for making the first step in the selection process. Following the steps laid down at <http://erp.technologyevaluation.com/> a list can be obtained about both the ERP systems suitable for my business and their comparisons. The service is free up to the point of making the recommendations but the comparison of the systems is a fee-charging service.

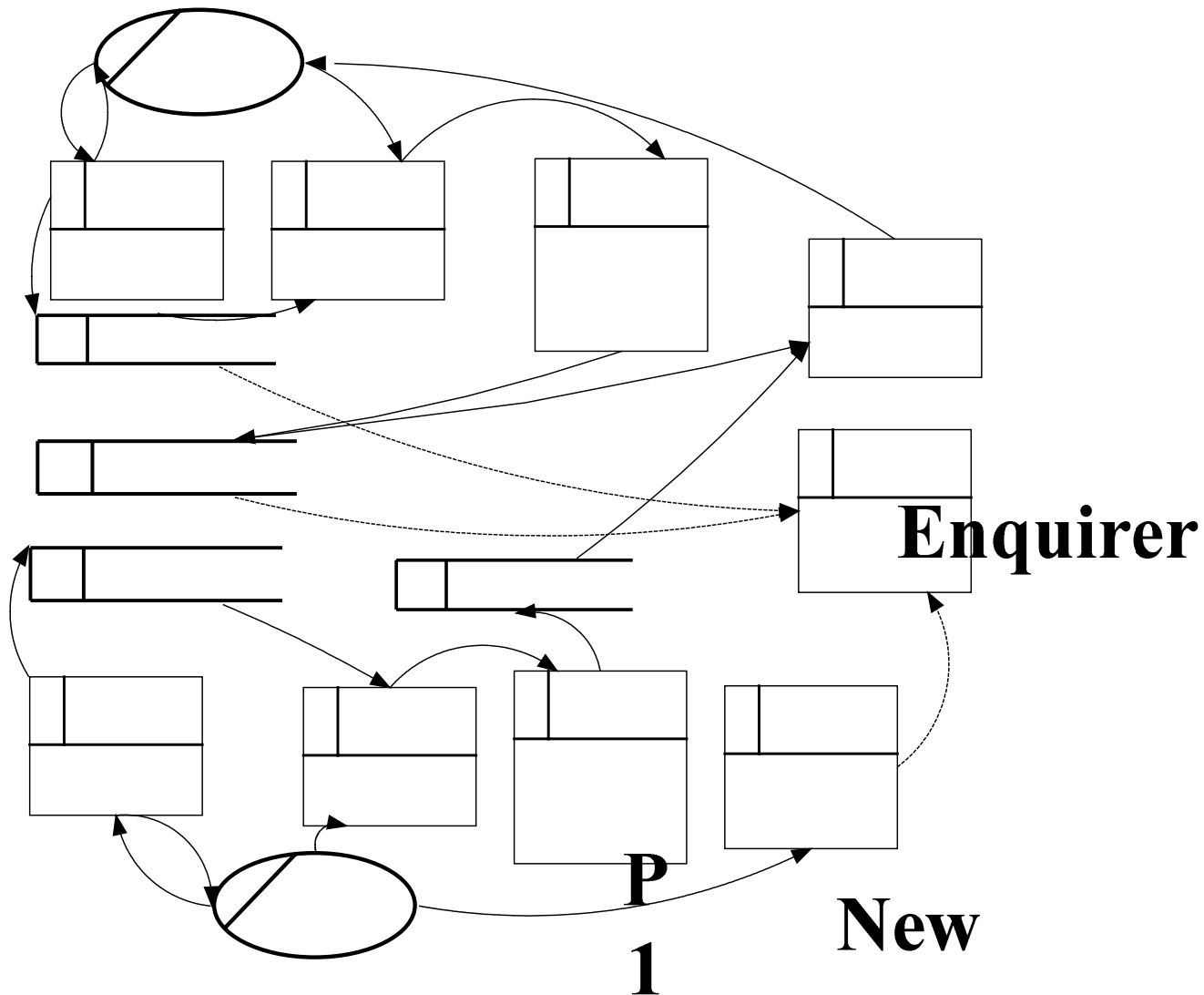


Figure 1: A sketch for the dataflow-chart of the application assisting selection

Own sources, 2007

As part of my own research a plan for an application supporting pre-selection was prepared for small and medium sized enterprises, the demo version of which was also implemented. The primary obstacle to making the service publicly available was that only few companies selling ERP solutions that had been invited to participate filled in the questionnaire, which would have formed the primary basis for selection. These questionnaires were also sent out in an electronic form. There are hopes that supported by some marketing activities there will be opportunities in the future to create the necessary database. The sketch for the data flows of the ERP_{Select} service are illustrated in figure 8.

At present the demo version stores the necessary data in four databases:

- Databases storing user data
 - Data of people making enquiries (people looking for something)

- Data of those offering ERP solutions (suppliers)
- Database in fact ERP system
- The database storing the system requirements of those looking for ERP systems
- The database storing the data of the ERP systems on offer.

The basis for the selection process is consists of a well-defined system of different criteria. As regards the ERP_{Select} processes there are three different functions to be identified:

- Providing user data, registration (both supply and demand sides)
- Providing the considerations for the system (both supply and demand sides)
- Doing the selection, information on the results.

Date of enquire
ERP

From the point of view of the interested person, the person trying to find ERP solutions, the ERP_{Select} operates in the following way:

- Registration and entry
- Giving the criteria in ten steps.

After the data have been given the ERP_{Select} selects the solutions that are the most favourable for the enquirer from the ERP database.

The involvement of ERP distributors is considered to be important in order that our database containing ERP systems and businesses selling ERP systems have as current information as possible and so be able to help small and medium sized businesses with more up-to-date information with making their choices as regards selecting systems for themselves.

4. ERP_{Compare} model for evaluation

The basis for the multifactoral evaluating system is the creation of some multidimensional system of considerations or criteria, which in turn will give the basis for evaluating the system. the advantage of the system is that factors that are hard to quantify can also be included in the selection process or the evaluation, while its disadvantage is that there are no standards available for creating the system of criteria, these may change individually and the expertise of several specialists is necessary for comparing them.

It is practical to include the considerations into several groups.

- Exclusive considerations: basic requirements
- Listing considerations: desirable characteristics.

When compiling the system of considerations one can rely on well-known methodologies like Euromethod ISO/IEC 9126. In conformity with the system of considerations the quantifiable weight of each consideration also has to be defined. With the help of the preference matrices established by comparing pairs or groups of the evaluation considerations individual weighed systems of considerations can be given, with the help of which the satisfactory decision regarding the investment can be made. The method is remarkably useful in analysing implemented investments as well.

In the course of conducting this research the multifactoral evaluation model for small and medium sized enterprises published in his doctoral thesis by P. Michelberger in 2004 was also amended. The decision supporting tool developed in this research is suitable for comparing two potential ERP projects. The

model was given the nickname ERP_{Compare} referring to the fact that here we speak of an evaluation system supporting the selection of ERP systems.

When the model was developed the evaluation considerations were arranged according to hierarchical subordination. On this basis the model includes main considerations, considerations and sub-considerations. Within the model itself there are three main considerations differentiated, namely:

- User main consideration
- Economic main consideration
- Main consideration related to the evaluation of suppliers.

All the three main considerations were further divided into considerations, which again were divided further and sub-considerations evolved. For the purposes of a comparative evaluation a model should have the following data (these cells are indicated against a white background in the model):

- Weighing level I belongs to the main consideration. The total value must be 100%.
- Weighing level II belongs to the considerations given at the second level of hierarchy.
- There are weighs belonging to the considerations given at the third level of hierarchy.
- Score requirement means the minimum number of points required in connection with any system. Values have to be given only for the third level of hierarchy as the points pertaining to considerations and main considerations are calculated by the program itself.
- Max. Score means the maximum number of points belonging to the individual considerations. Values have to be given only for the third level of hierarchy as the points pertaining to higher levels are calculated on the basis of these inputs.
- Scores belonging to projects A and B. Values have to be given for the third level of hierarchy only.

It is to be noted here that scores can be ordered to the individual projects if some previous information or knowledge have been obtained regarding the given system and the suppliers. It follows from this that the ERP_{Compare} resource can only be used in the second phase of selection. The model can be supplemented at any time by

including new considerations or projects if one should use it to evaluate several solutions.

Figure 9 contains a diagram which illustrates the considerations pertaining to user main considerations in the case of an A and a B project. The evaluation remains simple as long as either one of the two projects is dominant. Looking at considerations “Supplier undertakings following system implementation” and “Functionality” in figure 9 the question as to which consideration is worth more can be asked. The evaluation according to sub-considerations may be helpful in making this decision.

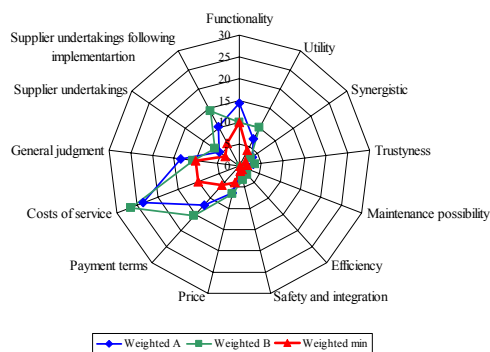


Figure 2: Evaluation according to user main considerations in the ERP_{Compare} model
Own sources, 2007

By applying ERP_{Compare} the sequencing of the potential solutions can be attained, which in turn helps with making selection decisions. Another practical use is that before this investment is made potential ERP suppliers can be asked to compile their tender proposals according to these considerations and so conducting the evaluation work will become easier later in the decision-making phase.

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