Enterprise System Selection Process in Polish organizations

Introduction

The selection of an Enterprise System is a complex and time consuming process (Wei and Wang, 2004), and a systematic selection policy is crucial to the future success of a project (Lien and Chan, 2007). The purpose of this paper is to examine the Enterprise System selection process in Polish organizations from the perspective of adopting organizations with the use of a survey study method. Generalization of possible selection procedures is made on that basis.

1. Importance of Enterprise System Selection

Enterprise Systems (ES) were formerly identified with Enterprise Resource Planning applications (Davenport, 1998). Rosemann (1999) defines an ERP system as ‘a customizable, standard application software which includes integrated business solutions for the core processes (e.g. production planning and control, warehouse management) and the main administrative functions (e.g. accounting, human resource management) of an enterprise.’ Throughout the years, these systems evolved into application suites including ERP, CRM, Business Intelligence, Workflow, Content Management and other functionalities, required to support the information and work flow in the organizations. Generalizing the above definition one can state that Enterprise System is a standard, customizable application suite which includes integrated business solutions for major business processes of an enterprise.

Enterprise System implementation process is long and risky (Soja, 2008) due to many reasons, including people, process and technological risk factors (Nelson, 2007). One of the risks that emerges long before the project start is the selection of an inappropriate system (Bakä, Romsdal and Alfnes, 2008). Due to this fact a selection process should be performed carefully and with the use of the available best practices. On the other hand, the selection process is long, complex and requires specific knowledge, commonly not available internally in the adopting organizations (Verville and Halingten, 2003). These facts justify the research aiming at the identification of the selection techniques, used by the enterprises and resulting in the proposal of usable selection procedures.

The ES selection process consists of the three main phases:

– business justification,
system selection,
- implementation partner selection.

The aim of the first phase is to determine, whether the organization needs an IT investment, and if so, what type of an IT solution should be taken into consideration. The product of that phase is a business case document that should end up with a decision, whether to launch an IT project or not. If the business case supports the decision to proceed, the next two phases are performed, resulting in the selection of a system itself and an implementation partner which will conduct the project, and support the system after its go-life.

Having in mind that all the three phases contribute equally to the success of the implementation process, in this paper I will concentrate on the selection of an appropriate system. Two aspects of the system selection will be discussed: selection criteria and procedure.

2. Enterprise System Selection – a survey

A survey study was conducted among Polish enterprises to determine the ES selection practices they use. A population for the survey was defined as ‘the enterprises that made a major ES investment in the last 5 years in Poland’. As there is no official list of such enterprises available, a search was made on the web sites of Enterprise Systems’ providers and their implementing partners for references. The 22 web sites of SAP, IFS, Oracle and Microsoft Dynamics vendors/implementing enterprises were analyzed. Additionally a query was made among the professionals from the local consulting enterprises as well doctoral studies candidates, personally known to the author. As a result, the overall number of 138 enterprises was identified. As the sampling procedure was based on the reference lists search, all the projects included in the sample were productive (i.e. there were no abandoned projects in the sample). An e-mail questionnaire was sent to these enterprises with the cover letter, asking a decision-maker in the project (project manager or steering committee member) for a response. If an e-mail address of such a person was known, the questionnaire was sent to this person directly, otherwise it was sent to the general e-mail address of an enterprise. The total number of 28 enterprises responded to the survey and the majority of the respondents (20 out of 28) played the decision-making role in their projects, being either the sponsor, member of the steering committee or the project manager. The other roles were team member (3), person not involved personally in the project (3), free-lance consultant supporting the steering committee (1) and IT department specialist (1). The respondents were asked questions about the criteria used for the system evaluation and activities performed during this process. One questionnaire was unusable, as the enterprise did not have influence on the system chosen.
2.1. Enterprise System Selection Criteria

Everdingen et. al. (2000) determined that the most important criteria during ERP system selection in European SME-s were: cost, user friendliness, fit with business procedures, scalability, support and training. The last two criteria should be taken into consideration during the implementation partner selection which is not in the scope of this paper. User friendliness is a criterion which is hard to measure and relies on the users’ opinion. Fit with business procedures and scalability are functional criteria which should be included, among others, in the system functional requirements specification, whilst cost is a measurable, financial criterion. Another study by Baki and Cakar (2005) revealed that Turkish enterprises considered functionality as the most important criterion, followed by technical aspect, cost and service & support. Basing on the above studies, the following list of criteria was formulated:

- Objective criteria:
  - fit with functional requirements,
  - license cost,
  - implementation cost,
  - technological alignment (fit with the technology currently used in an enterprise).
- Subjective criteria
  - management opinion,
  - users’ opinion,
  - IT stuff opinion.

The respondents were asked to rank each of the above criteria on the scale from 1 (unimportant) to 5 (most important). They could assign the same rank to more than one criterion. The average rank and standard deviation for each of the criteria is shown in Table 1:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Average rank</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit with functional requirements</td>
<td>4.37</td>
<td>0.56</td>
</tr>
<tr>
<td>Management opinion</td>
<td>3.81</td>
<td>0.92</td>
</tr>
<tr>
<td>License cost</td>
<td>3.67</td>
<td>0.88</td>
</tr>
<tr>
<td>Implementation cost</td>
<td>3.67</td>
<td>1.00</td>
</tr>
<tr>
<td>IT stuff opinion</td>
<td>3.48</td>
<td>0.80</td>
</tr>
<tr>
<td>Technological alignment</td>
<td>3.41</td>
<td>1.31</td>
</tr>
<tr>
<td>Users’ opinion</td>
<td>3.11</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Source: Own elaboration

As one can see, the significantly most important criterion for the examined organizations is fit with functional requirements, followed by the opinion of the management and cost. This indicates that the Enterprise System implementation is considered to be a business initiative, undertaken to support company’s organizational goals, rather than an IT project aiming at supporting end-users. User
and IT stuff opinion as well as technological aspect are thus considered less important. The results show that the examined enterprises represent a considerably high maturity in choosing the selection criteria. The results also show the importance of requirements specification as a basis for an informed decision, as the fit with functional requirements is the most important criterion.

2.2. Enterprise System Selection Procedure

The literature review performed by Bakås et al. (2008) indicates that articles presenting methodologies or step-by-step models supporting ES system selection process are scarce and the models presented are usually difficult to follow in a real-life environment. Stefanou (2000) introduces a three phase ES selection procedure:

1. Business vision,
2. Analysis of business requirements vs. constraints,

This author stresses out that the detailed functionality and enhancements requirements matrix should be produced and later compared with the candidate systems functionality. The role of the requirements specification in the selection process is also stressed by Vilpola and Kouri (2005) who also recognize the importance of business process analysis as a predecessor to requirements gathering.

However there are selection methodologies that are basing only on general specification of ‘business requirements’, system demonstrations, and opinion gathering (e.g. Illa et al., 2000). Bernroider and Koch (2001) state that there is a significant difference in the approach to information gathering between big and small/medium sized enterprises. Small and medium sized enterprises tended to simplify the process by applying such methods like presentations of the systems and mailing of a requirements catalogue in form of a questionnaire whilst the big ones used also more sophisticated approaches like system examination of the system by the consultants and analysis of a prototype.

The examination of the literature cited above has led to the formulation of a list of activities, that might be performed during the system selection. The list, together with the frequency of use among the examined enterprises is shown in Table 2.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>General requirements specification (list of functional areas and sub-areas of an ES system)</td>
<td>20</td>
<td>74,07</td>
</tr>
<tr>
<td>Standard system functionality presentation</td>
<td>20</td>
<td>74,07</td>
</tr>
<tr>
<td>Business process analysis</td>
<td>17</td>
<td>62,96</td>
</tr>
<tr>
<td>Detailed requirements specification (detailed list of required system functions)</td>
<td>15</td>
<td>55,56</td>
</tr>
<tr>
<td>Dedicated system functionality presentation (including functionalities specific for the company)</td>
<td>14</td>
<td>51,85</td>
</tr>
</tbody>
</table>

Source: Own elaboration
Not surprisingly the most common activities include general system specification and presentation of the system standard functionality. These are the easiest and least time/resource consuming activities, both for the adopting organization and for potential vendors. However, making a valid decision on a basis of such a general information can lead to misfit between the organization’s needs and system functionality. The informed decision should include the use of a reasonable combination of the remaining three methods. The combinations which occurred in the sample are shown in Table 3:

**Table 3. System selection activities combinations**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Frequency for subgroups</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detailed requirements, business process analysis, dedicated presentation</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detailed requirements, business process analysis</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detailed requirements, dedicated presentation</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detailed requirements</td>
<td>3</td>
<td>15</td>
<td>55,56</td>
</tr>
<tr>
<td>Business process analysis, dedicated presentation</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated presentation</td>
<td>2</td>
<td>5</td>
<td>18,52</td>
</tr>
<tr>
<td>Business process analysis</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>7</td>
<td>25,92</td>
</tr>
</tbody>
</table>

Source: Own elaboration

As one can see from the above table more than half of the examined enterprises (55,56%) decided to base their decision about the new Enterprise System on the detailed functional requirements. A large subgroup, constituting 40,74% of all examined enterprises performed a business process analysis to facilitate the requirements gathering process and almost 30% of all examined enterprises used all available analysis methods.

The second group of enterprises, constituting 18,52% of the sample decided not to perform the detailed requirements analysis, but to ask the possible vendors for the dedicated presentation that would include the functionalities specific for the company/industry.

The third group of almost 26% of the examined companies either did not perform any of the above activities or business process analysis only. As the business process analysis by its own leads to better understanding of the company’s specificity and helps to determine the project scope, but does not decrease the possible misfit between the system functionality and company’s needs, such approach can hardly be treated as a separate selection methodology.
3. Enterprise System Selection Procedures

Basing on the survey results presented in the previous section, one can draw a picture of possible approaches to the system selection task. The following generic approaches can be identified:

1. **Complete model based on detailed requirements**, consisting of the following steps:
   a) Business process analysis – which gives prospective vendors the big picture of the company’s operations, enables the definition of the project scope and facilitates the process of requirements specification,
   b) Detailed requirements specification – which is the main document allowing vendors to prepare the offer and the adopting organization to compare the competing systems,
   c) As an option – dedicated presentations of the systems or prototype presentation based on the requirements specification.

2. ‘Fast’ model based on detailed requirements in which the business process analysis is skipped. The project scope has to be established on the functional rather than process-oriented basis and so does the requirements specification. The requirements analysis may be more difficult to complete without the process map, so this approach is possibly suitable for smaller and less complicated projects. Alternatively, a ‘model’ requirements catalogue, offered by some consulting enterprises may be used as a reference. As in the previous model, also here the detailed requirements specification is the main basis for comparison between the alternatives. Dedicated presentations or prototype examination may be an option for additional analysis.

3. **Dedicated presentations model**, in which the decision is based only on the dedicated presentations of the system. As there is no detailed requirements specification, the vendors are not able to prepare the prototype of the system. So this method may be used only for choosing either best-of-breed systems, offering fixed functionality for a certain industry, or small off-the-shelf systems with very limited scalability.

4. ‘Gut feeling’ selection, in which the decision is based on the subjective opinion of the decision-makers formulated after the presentations of the standard functionality of the systems. This highly subjective and uninformed way of decision-making does not allow for optimal choice of the system and may possibly lead to serious misfits between the selected system and company’s needs.

The study presented in this paper did not answer the question, how the selection procedure affects the implementation process and its effects. This and the suitability of the selection models for different sub-types of Enterprise Systems should be subject to further investigation.
Conclusions

The survey study, presented in this paper revealed, that the most important criterion in ES selection for the examined organizations is fit with functional requirements, followed by the opinion of the management and cost. Regarding the selection procedures, the survey results show that 74% of the examined enterprises used some kind of formalized approach to the ES selection process. This is consistent with the results of the survey, made among Austrian organizations by Bernroider and Koch (2001). The general conclusion is that there is no gap in the selection procedures between Polish enterprises and the ones from economies considered to be more developed. More than a half of the examined enterprises applied the model based on the detailed requirements analysis. Still 25% of the enterprises did not apply any model of informed system selection. As the survey sample was small and the sample selection process was not random, the results should not be generalized to the whole population of Polish enterprises.

References
Summary

The purpose of this paper was to examine the Enterprise System selection process in Polish organizations from the perspective of adopting organizations with the use of a survey study method. The survey among 27 enterprises resulted in the conclusion, that the most significant criterion for the ES selection is fit with the functional requirements. Thus the requirements’ analysis should be in the center of the selection process, which was confirmed by the second step in the survey. It revealed that more than half of the examined enterprises (55,56%) used an approach based on the detailed functional requirements specification. A large subgroup, constituting 40,74% of all examined enterprises performed a business process analysis to facilitate the requirements gathering process. The second group of enterprises, constituting 18,52% of the sample decided not to perform the detailed requirements analysis, but to ask the possible vendors for the dedicated presentation that would include the functionalities specific for the company/industry. The third group of almost 26% of the examined companies relied on the standard system presentations and opinion of the decision-makers. The generalization of the results to the models of system selection ended up with the formulation of four generic approaches to the system selection, which are:

- Complete model based on detailed requirements,
- ‘Fast’ model based on detailed requirements in which the business process analysis is skipped,
- Dedicated presentations model, in which the decision is based only on the dedicated presentations of the system,
- ‘Gut feeling’ selection, in which the decision is based on the subjective opinion of the decision-makers formulated after the presentations of the standard functionality of the systems.

Further study should be performed to confirm the usability of the above models to the selection of different types of ES systems.