



Sizing ERP Implementation Projects: An Activity-Based Approach

Guy Janssens, Open University Nederland, The Netherlands

*Rob Kusters, Open University Nederland and
Eindhoven University of Technology, The Netherlands*

*Fred Heemstra, Open University Nederland and
KWD Result management, The Netherlands*

ABSTRACT

ERP implementation projects affect large parts of an implementing organization and lead to changes in the way an organization performs its tasks. The costs needed for the effort to implement these systems are hard to estimate. Research indicates that the size of an ERP project can be a useful measurement for predicting the effort required to complete an ERP implementation project. However, such a metric does not yet exist. Therefore research should be carried out to find a set of variables which can define the size of an ERP project. This paper describes a first step in such a project. It shows 21 logical clusters of ERP implementation project activities based on 405 ERP implementation project activities retrieved from literature. Logical clusters of ERP project activities can be used in further research to find variables for defining the size of an ERP project.

Keywords: *effort prediction; enterprise resource planning (ERP); ERP activities; implementation project; project size*

INTRODUCTION

Globalization has put pressure on organizations to perform as efficiently and effectively as possible in order to compete in the market. Structuring their internal processes and making them most efficient by integrated information systems is very important for that reason. In the 1990s, organizations started implementing ERP systems in order to replace their legacy

systems and improve their business processes. This change is still being implemented. ERP is a key ingredient for gaining competitive advantage, streamlining operations, and having “lean” manufacturing (Mabert, Soni, & Venkataramanan, 2003). A study of Hendricks indicates that research shows some evidence of improvements in profitability after implementing ERP systems (Hendricks, Singhal, &

Stratman, 2006). Forecasters predict a growth in the ERP market.

Several researchers also indicate that much research is still being carried out in this area (Møller, Kræmmergaard, & Rikhardsson, 2004; Botta-Genoulaz, Millet, & Grabot, 2005). Although the research area is rather clearly defined, many topics still have to be researched and the usefulness of results for actual projects has to be designed.

ERP projects are large and risky projects for organizations, because they affect great parts of the implementing organization and lead to changes in the way the organization performs its tasks. The costs needed for the effort to implement these systems are usually very high and also very hard to estimate. Many cases are documented where the actual required time and costs exceeded the budget, that is to say the estimated costs, many times. There are even cases where ERP implementation projects led to bankruptcy (Holland & Light, 1999; Scott, 1999). Francalanci states that software costs only represent a fraction of the overall cost of ERP projects within the total costs of the implementation project, that is to say, less than 10% over a 5-year period (Francalanci, 2001). In addition, Willis states that consultants alone can cost as much as or more than five times the cost of the software (Willis, Willis-Brown, & McMillan, 2001). This is confirmed by von Arb, who indicates that consultancy costs can be 2 to 4 times as much as software license costs (Arb, 1997). This indicates that the effort required for implementing an ERP system largely consists of effort-related costs. Von Arb also argues that license and hardware costs are fairly constant and predictable and that only a focus on reducing these effort-related costs is realistic. The conclusion is legitimate that the total effort is the most important and difficult factor to estimate in an ERP implementation project. Therefore, the main research of the authors only focuses on the estimation of the total effort required for implementing an ERP system.

In every project there is a great uncertainty at the start, while at the end there is only a minor uncertainty (Meredith & Mantel, 2003). In the

planning phase, the most important decisions are made that will affect the future of the organization as a whole. As described earlier, a failure to implement an ERP system can seriously affect the health of an organization and even lead to bankruptcy. This means that it would be of great help if a method would exist that could predict the effort required for implementing the ERP system within reasonable boundaries. The method should not be too complex and should be quick. Its outcomes should support the rough estimation of the project and serve as a starting point for the detailed planning in the set-up phase of the project phase and for the first allocation of the resources. Moreover, if conditions greatly change during a project, the method could be used to estimate the consequences for the remaining effort required for implementing the ERP system.

The aim of this article is to answer which activities exist in ERP projects according to literature and how these can be clustered as a basis for defining the size of an ERP project.

In the article, the approach and main goal of our research will first be described, followed by a literature review on ERP project activities. After that, we will present the clustering approach and results followed by conclusions and discussion.

RESEARCH APPROACH

When examining more or less successful methods for predicting software development effort, it is to be expected that with regard to implementing ERP systems, it will also be possible to find measurements for predicting implementation efforts.

However, Stensrud (2001) already indicated that although many effort prediction systems exist, none, unfortunately, have been specifically devised for ERP projects. Heemstra and Kusters (2005) collected candidate cost driver variables from literature and asked experts in two major companies what they thought about the relevance of these variables. One of their conclusions was that the size of an ERP implementation is a major cost driver in ERP implementation projects. In software develop-

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