A Study of the Effects of Maintenance Category and Tailoring Option on ERP Software Maintenance Effort

Celeste See-Pui Ng
Department of Information Management
Yuan Ze University, Taiwan R.O.C.
Email: *celeste@saturn.yzu.edu.tw*

Extended Abstract

Maintenance activity is the longest and most costly phase in a software lifecycle, which consumes 50-70% of total software costs are recognized among researchers. This fact is also true in the context of enterprise resource planning (ERP) software packages that provide an integrated enterprise-wide information system capable for coordinating, monitoring and executing key internal business processes. In-house software maintenance effort determinants have been studied in an endeavor to contain and have better control of maintenance effort and cost; however, this is a paucity of this type of study in the context of ERP. The research question attempted in this research is: what are the factors affecting ERP maintenance effort? Two main factors examine in this study are maintenance category and maintenance tailoring option. Under the classical software maintenance classification, maintenance requests can be categorized into corrective, adaptive and perfective requests. In the context of ERP, tailoring option defines the method used to make changes to the system. There are quite a few types of tailoring option but the most common are setting or configuring the ERP system's configuration table, and programming, i.e. writing some code into the system.

Based on the existing literature in both in-house and ERP software, the formulated hypotheses are as follows: (1) H1a: an ERP perfective maintenance project requires more maintenance effort than an ERP corrective maintenance project, (2) H1b: an ERP adaptive maintenance project requires more maintenance effort than an ERP corrective maintenance project, and (3) H2: an ERP maintenance project that uses configuration tailoring option will require lesser maintenance effort than an ERP maintenance project that uses programming-related tailoring option. These hypotheses were tested using a set of 593 completed ERP maintenance projects collected from a field study in medium-sized government organization in Australia. The ERP system in-use at this organization at the point of data collection was an SAP R/3 system.

While there is empirical evidence from this study which is consistent with findings for in-house software, counter-intuitive discoveries are also observed. We find that an ERP perfective maintenance project requires more maintenance effort than an ERP corrective maintenance project. However, no convincing result is obtained to verify that an ERP adaptive maintenance project requires more maintenance effort than an ERP corrective maintenance project. Also, we fail to convincingly determine that an ERP maintenance project that uses the configuration tailoring option requires less maintenance effort than an ERP maintenance project that uses a programming-related tailoring option. This observation could be the result of the inherent complexity associated with configuration. For instance, the SAP system has more than 8,000 configuration tables and the complexity of configuration depends on the type of configuration. For future extension, this is worthwhile to perform a cross-analysis of different tailoring options with respect to different categories of maintenance request and to observe how maintenance effort is affected by different tailoring options for each maintenance category. Furthermore, further experimental research aimed at confirming the findings and observations reported is also needed.