Chapter 4
Approaches for Automating ERP Category Configuration for SMEs

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ABSTRACT

Disruptive business models, such as software as a service and open source software, have made Enterprise Resource Planning (ERP) packages and related software more accessible for Small and Medium Enterprises (SMEs). However, the consulting required to configure an ERP to meet the specific needs of an organization remains a major financial burden for SMEs. One configuration task which is common to many ERPs is category configuration. With the help of automated category configuration support, managers of small businesses can perform category configuration on their own and reduce part of the consulting cost. This chapter presents the design of generic automation approaches for ERP category configuration, their implementation and their application to the open source ERP package ERP5. The approaches are based on similarity of example data, automatic vocabulary consolidation through Wikipedia redirects and (meta-) templates. The empirical evaluation through a laboratory experiment with one hundred test persons and a survey supports the validity, effectiveness and utility of the designed artefact.

INTRODUCTION

ERP packages and related systems are said to enable organisations to manage their resources efficiently and effectively by providing a total and integrated solution for their information processing needs (Nah, Lau, & Kuang, 2001). Due to technical and economical restrictions, ERP systems traditionally have been focused on larger organisations. In recent years, however, a turn of the market towards SMEs can be observed (Deep, Guttridge, Dani, & Burns, 2008). Adam and O'Doherty (2000) show that SMEs are as likely to be interested in ERP as multinational organisations. ERP packages are being viewed as a key factor for gaining competitive advantage in the SME sector, and empirical findings confirm these expectations (Koh & Simpson, 2007).

However, Morabito, Pace, and Previtali (2005) identify a lack of human and financial resources, as well as lock-in risks, as major problems that SMEs face when adopting ERP technology. They often do not have dedicated teams for implementation and software maintenance and cannot spend as much money on Information Technology (IT) as large enterprises, which in turn makes them more vulnerable to the risk of lock-ins in ERP packages and vendors when requirements change after implementation.

Business models in which SMEs access ERP functionalities through the Internet could alleviate the SME-specific problems and broaden the ERP market (Adam & O'Doherty, 2000). Since a some years, Software as a Service (SaaS) has been associated with this kind of business model (Hofmann, 2008). By providing applications directly through the Internet, SaaS eliminates installation and update tasks, thus saving clients from maintenance work and reducing IT expenses by on-demand pricing (Wang et al. 2008). Another "disruptive business model" mentioned by Hofmann (2008) is that of open source companies. Open source systems are considered a viable alternative for SMEs as they tackle their specific problems. They not only help to save license costs, but they also prevent lock-in. As their source code is free to everyone, they lower the barrier for third parties to perform modifications (Campos, Carvalho, & Rodrigues, 2007).

Despite these promising perspectives, consulting efforts remain a financial burden for an ERP implementation project (Janssens, Kusters, & Heemstra, 2007). Although ERP systems are cheaper and easier to implement for SMEs than for large enterprises (Morabito et al., 2005), SMEs may face challenges in affording major consulting support (Kinni, 1995; Snider, Da Silveira, & Balakrishnan, 2009). Open source ERP packages help to save license costs, but implementation costs often far exceed the costs for ERP package licenses. Thus, the greatest savings can be achieved during implementation (Timbrell & Gable, 2002).

To make implementation less complex and less costly, ERP vendors try to reduce the amount of knowledge required for implementation by various degrees: cutting down functionality, designing package templates or giving customers and system integrators a common implementation methodology (Timbrell & Gable, 2002). Functionality cut-down and package templates are static approaches and therefore only suit a defined group of companies sharing common business needs. A common implementation methodology does not permit the CEO of a small business to configure his ERP all on his own. This paper therefore proposes automated implementation support as an alternative or complementary approach to ERP package tailoring for small businesses. Off-the-shelf ERP packages are implemented mainly by configuration (Brehm, Heinzl, & Markus, 2001). An automated configuration support system can enable SMEs to perform parts of this configuration process on their own. Consulting costs can be saved or rather applied in a more tightly focussed fashion. Reducing the cost of ERP configuration would lessen the burden of the implementation process and make ERP more accessible for SMEs. Koch & Mitteregger (2014) find in an empirical study with data from an ERP provider that with increasing customization, the support effort also increases. If part of this customization is done by an SME on its own, later support costs could be saved because the SME better understands the customizations. ERP configuration demands extensive knowledge about the organisation, its structure and its requirements (Negi & Bansal, 2013). This knowledge is rather possessed by the own management of the organisation then by external consultants. Zach, Munkvold, & Olsen (2014) show that the owner-manager significantly influences ERP implementation in SMEs. Therefore this investigation follows the vision that a packaged ERP system could be configured by the management of an SME on its own thanks to an automated configuration support system based on a questionnaire.

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