Benefits of Different Types of Enterprise Modeling Initiatives in ICT-Enabled Process Change

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ABSTRACT
The paper reports a study that investigates the use of enterprise modeling empirically in eight combined process change and information technology initiatives. The paper targets a need in academia and industry for knowing more about enterprise modeling in practice. The authors identify five different types of modeling initiatives by analyzing how each case combines the use of ICT, the main focus of process change, and the objectives of modeling. They identify and compare the reported benefits of enterprise modeling in each type of initiative. The authors conclude that to be able to give a qualified answer to executive management on the potential benefits of an enterprise modeling initiative, it is beneficial to identify the type of initiative in question.

Keywords: Business Process Change (BPC), Business Process Improvement (BPI), Enterprise Modeling, Process Modeling, Process Modeling Success

INTRODUCTION
Enterprise modeling (EM) is often used as a catch-all title (Fraser, 1994) covering the set of activities, methods and tools used to develop models of various aspect of an enterprise (AMICE, 1993; CEN, 1994; Petrie, 1992). A model of a business process is an example of such an enterprise model (Andersen, 2000). The aim of EM is to externalize knowledge that adds value to the enterprise or needs to be shared (Fraser, 1994). According to White and Miers (2008) people generally use models to underpin their conversations, communication and understanding, so that the models act as a backdrop for all improvement or business change programs. The assumption has so far been that humans are the primary consumers of models, but today models also can play the role as primary inputs to a business support environment.

This paper reports a study where the use of EM has been empirically investigated in eight real-life Norwegian cases. Each of them combined process change and technology initiatives so that information and communication technology (ICT) functioned as an enabler of process change. The motivation is that research on EM in practice has been more or less neglected by the research community (Persson,
2001). We include both cases where models were made and used by human beings as part of process change processes and an initiative where models were made as input to a business support environment in the form of a quality system, thereby enabling process change in the long run.

We first present a literature review, followed by our overall research design. The following section presents the three types of process change focus and the four different types of ICT-initiatives we found in our cases. We then describe the five different types of modeling initiatives we identified, along with the benefits of modeling reported for each of them. Finally we discuss the contributions and limitations of our study and make suggestions for further research.

BACKGROUND

EM as a term to describe the activity of modeling any pertinent aspect of an organization (Fraser, 1994) is nothing new. Over the last decade different enterprise architectures have been developed, like the Zachman Framework for Enterprise Architecture (Schekkerman, 2004; Urbaczewski & Mrdalj, 2006), DoDAF (Urbaczewski & Mrdalj, 2006), PERA (Schekkerman, 2004) and CIMOSA (Kosanke, 1995), to mention just a few. In addition, several commercial computer tools have come into the marketplace to assist with architecture visualization and modeling.

Persson (2001) states that extensive research efforts have been invested into the development of EM languages, but that considerably less effort has been devoted to gain knowledge about EM practice. Motivated by this knowledge gap she investigated situational factors and their influence on adopting a participative approach in EM practice. She came up with recommendations for use of EM particularly in the requirements engineering stages of the development process, and a grounded framework of situational factors that influence the applicability and application of participative EM, together with a theory with regard to how the factors affect each other.

Persson and Stirna (2002) report from two separate EM research projects where one targeted ways of working and the other tool support. They carried out case studies, company observations and a total of 22 interviews. Persson and Stirna (2002) believed that to be able to formulate practical guidelines for EM tool acquisition, the guidelines had to be grounded in substantial practical experience, calling for the need to mainly target expert EM method and tool users in the interviews. A conclusion from their studies is that participative EM should only be applied in consensus oriented organizational cultures, and if properly applied it is a very strong way of committing stakeholders to business decisions.

Within a sub-field of EM, process modeling, Recker, Indulska, Rosemann, and Green (2010) did an exploratory empirical investigation on the ontological deficiencies of process modeling with the industry standard Business Process Modeling Notation (BPMN). In the study they highlight the need for consideration of representational issues and contextual factors in decisions relating to BPMN adoption in organizations.

Glassey (2008) has done a case study where three process modeling techniques, Adonis, OSSAD and UML, are compared in order to find common concepts and to identify significant differences. He concludes that at the operational level the three techniques are equivalent and can be used indifferently. At the structural level the choice of technique are dependent of the domain to be modeled.

Sedera, Gable, Rosemann, and Smyth (2004) conclude that, whereas there has been much research on process modeling techniques and corresponding tools, there has been little empirical research into important factors of effective process modeling and post-hoc evaluation of process modeling success. As part of their research they have developed a success model for business process modeling by conducting a multiple case study. Bandara and Rosemann (2005) report a detailed case study conducted
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