Trade-Offs in the Performance of Workflows –
Quantifying the Impact of Best Practices

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Abstract. Business process redesign is one of the most powerful ways to boost business performance and to improve customer satisfaction. A possible approach to business process redesign is using redesign best practices. A previous study identified a set of 29 different redesign best practices. However, little is known about the exact impact of these redesign best practices on workflow performance.

This study proposes an approach that can be used to quantify the impact of a business process redesign project on all dimensions of workflow performance. The approach consists of a large set of performance measures and a simulation toolkit. It supports the quantification of the impact of the implementation of redesign best practices, in order to determine what best practice or combination of best practices leads to the most favorable effect in a specific business process.

The approach is developed based on a quantification project for the parallel best practice and is validated with two other quantification projects, namely for the knockout and triage best practices.

Keywords: Business Process Redesign, Business Process Simulation, Best Practices, Performance Measurement.

1 Introduction

The domain of business process redesign can roughly be divided into two different approaches: the revolutionary and the evolutionary approach. In the revolutionary approach, a redesign starts from a clean sheet. In the evolutionary approach, the existing business process is taken as a starting point. An example of this approach is the application of redesign best practices. Reijers provided an overview of all best practices currently encountered in literature. Further, a rough qualitative estimation of the expected impact was given. However, quantitative research is necessary to determine a more concrete impact of one or more redesign best practices on the performance of a workflow.

Although not much is known about the impact of redesign best practices on the performance of a workflow, some papers have been found that are based on a quantitative study. These studies include several best practices: knockout best
practice [1], extra resources best practice [6], specialist-generalist best practice [6, 17], flexible assignment best practice [17] and task composition, triage and case types best practice [20].

The main shortcoming of the above mentioned literature is that none of the authors, with the exception of [1] provided guidelines for the redesign of workflows: what best practice should be applied in what situation, process, or setting? Other deficiencies are the lack of a general approach to quantify the impact of best practices, the limited number of different dimensions of performance, and the limited number of aspects per measured dimension. Further, none of the authors, with the exception of [17], quantified the impact of the simultaneous implementation of more than one best practice.

In our research, we aimed to quantify redesign best practices on as many dimensions as possible. This paper provides an overview of possible performance dimensions and related performance measures. These performance measures have been applied in a simulation study to quantify the impact of a redesign best practice, i.e. the parallel best practice. In the parallel best practice one considers whether tasks may be executed in parallel.

The setup of the paper is as follows. In Section s:perf the dimensions of performance are summarized. In Section s:plan the quantification approach is introduced, including the setup of the simulations, the approach when comparing different variants, and the statistical analysis. We carried out three simulation projects; one to develop the approach and two to validate it. The results of these simulations (i.e. the impact on the identified performance measures) for the best practices involved are shown in Section s:results. The paper concludes with a discussion of the results.

2 Performance Measurement

This study focused on the quantification of the impact of a redesign best practice on the performance of a business process. Subject of study was the business process that is being redesigned, in contrast to, for example, the performance of individual employees or entire organizations.

In the last twenty years a variety of performance measurement systems has been developed. We assessed the literature on this subject to see what dimensions of performance the authors discerned and which are suitable for measuring business process performance. The following six systems have been considered: Performance pyramid [5], Performance measurement matrix [10], Results/determinants matrix [4], Balanced scorecard [9], Devil’s quadrangle [3] and Performance prism [2]. The assessment resulted in five dimensions of performance: time, cost, external quality, internal quality, and flexibility. These dimensions are all present in the devil’s quadrangle. Furthermore, the other performance measurement systems do not provide additional relevant dimensions. An extensive overview and validation of the dimensions, the relevant measures per dimension and their operationalization can be found in [8]. Here, we suffice with a brief overview.