

Chapter 12¹

Data Mining Techniques for Improving Workflow Models

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Abstract: Workflow management systems are widely used by business enterprises as tools for administrating, automating and scheduling the business process activities with the available resources. Workflow models are the fundamental components of workflow management systems, and are used for defining scheduling and ordering of workflow tasks. Since the control flow specifications of workflows are manually designed, they entail assumptions and errors, leading to inaccurate workflow models. Moreover, companies increasingly follow flexible workflow models in order to adapt to changes in business logic, making it more challenging to understand or forecast process behavior. In this chapter we describe recently proposed techniques for optimizing business processes by analyzing the execution details of previously executed processes, stored as a workflow log. The applications of workflow mining that we describe include the (re)discovery of process models, the optimization of process models, and the development of mechanisms to predict the future behavior of a currently running invocation of a process.

Key Words: Workflow, Workflow model, Flexible workflow, Workflow log mining, Business process, Business process optimization, Workflow model evolution.

¹ Liao, T.W. and E. Triantaphyllou, (Eds.), **Recent Advances in Data Mining of Enterprise Data**, *World Scientific*, Singapore, pp. 545-576, 2007.