

REAL-TIME RISK MEASUREMENT FOR BUSINESS ACTIVITY MONITORING (BAM)

BOKYOUNG KANG¹, NAM WOOK CHO^{2,*} AND SUK-HO KANG¹

¹Department of Industrial Engineering
Seoul National University
Seoul 151-742, Republic of Korea
realgas@naver.com; shkang@snu.ac.kr

²Department of Industrial and Information Systems Engineering
Seoul National University of Technology
Seoul 139-743, Republic of Korea

*Corresponding author: nwcho@snut.ac.kr

Received July 2008; revised December 2008

ABSTRACT. *This paper proposes a methodology to measure the risk level in real-time for Business Activity Monitoring (BAM). A decision-tree methodology was employed to analyze the effect of process attributes on the result of the process execution. In the course of process execution, the level of risk is monitored in real-time, and an early warning can be issued depending on the change of the risk level. An algorithm for estimating the risk of ongoing processes in real-time was formulated. Comparison experiments were conducted to demonstrate the effectiveness of our method. The proposed method detects the risks of business processes more precisely and even earlier than existing approaches.*

Keywords: Event processing, Business activity monitoring, Decision tree, Risk measurement

1. Introduction. Rapidly changing business environment requires companies to incorporate visibility into their business activities in real-time, so that they can respond quickly to any identified problems and opportunities. The need for real-time visibility of business activities has led to the development of Business Activity Monitoring (BAM), and the importance of which is still growing [3,6,9,15,25,27].

BAM is defined as a system to provide real-time access to critical business performance indicators, along with the supporting information to improve the speed and effectiveness of business operations [12,14]. The core function of BAM is to monitor a company's business activities in real-time. Another important function of BAM is to detect a set of events that might incur risks or present opportunities, so that users can quickly respond to these risks or opportunities. With the application of event processing technologies, BAM has adopted rule-based event processing. Event processing aims at analyzing correlations of events generated in process execution and discovering the influence of the correlation on the result of the process [14,16-18,27]. By using event processing, BAM not only can monitor business activities, but can also indicate proper reactions to process states. Most of the existing rule-based approaches have focused on the extraction, from historical process logs, of rules to identify CFFs (Critical Failure Factors) that lead to abnormal completion of processes, and those approaches define rules in the form of 'If (condition)-Then (action)' [1-3,5,7,9,10,13,21,22,25,28-30]. If the conditions of such predefined rules appear, the system generates reactions, usually warnings, to users and systems. Additionally, methods