Real-Time Business Data Acquisition: How Frequent is Frequent Enough?

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Abstract

Effective data acquisition for business process monitoring has become a critical element in today's business world. While the need for monitoring is generally agreed upon by both researchers and practitioners alike, the means and mechanisms are often vague. This is especially salient with the fast growing availability of various technologies to monitor in real-time through recent advances such as the Internet of Things (IoT), with specific emphasis on Radio-Frequency IDentification (RFID) and associated sensor networks. This study is motivated by the lack of published literature in data acquisition and analytics that specifically addresses sufficient real-time data acquisition for effective managerial monitoring. As a step in addressing this void, we review and extend existing literature in this general area by studying various requirements and information sources that relate to effective management monitoring. We then design an exploratory study to evaluate current managerial monitoring needs and the importance of automated data collection technologies. Results from this study show that the most important latent factor that influences an organization's information need is its dynamic competitiveness, and consequently, companies with a dynamic supply chain would need a faster transaction and operations data system. The second important latent factor is the behavioral performance, which renders it essential to have a human-centric data system. This study provides evidence for the significance in adopting technologies such as RFID and other IoT systems for real-time monitoring in highly dynamic organizations and offers guidelines for analytical technology adoption for various industries.

Keywords: RFID, process monitoring, monitoring frequency, real-time data acquisition
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