

Chapter 13

Are They Ready for the Big Thing?

Big Data Applications Requirements for Process Management and Evaluation of Current Software Solutions

Matthias Lederer

OTH Technical University of Applied Sciences, Germany

Julius Lederer

ISM International School of Management, Germany

ABSTRACT

Data-driven business processes management (BPM) is regarded as a central future trend because automation often makes huge amounts of data (big data) available for the optimisation and control of workflows. Software manufacturers also use this trend and call their solutions big data applications, even if some features are reminiscent of traditional data management approaches. This chapter derives from the basic definitions of big data including 13 central requirements that a big data BPM solution must meet in order to be described as such. One hundred twenty-one process management solutions are evaluated on the basis of these to determine whether they are real big data applications. As a result, less than 5% of all solutions analysed meet all requirements.

INTRODUCTION

The analysis of huge amounts of data, often referred to “big data”, offers companies promising opportunities on the one hand, but also implies major challenges on the other (Boones et al, 2018; Harper, 2020). The increasing digitalization of processes is accompanied by an increasing availability of data. In a summary of recognized definitions according to Lederer & Schott (2020), processes are understood as the sequence of activities (e.g. delivery of material, processing steps in the factory, outbound logistics).

DOI: 10.4018/978-1-7998-7740-0.ch013

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This workflow has a defined start (input, trigger, e.g. a customer order) and conclude with a defined end (output, e.g. automobile has been delivered to the customer). In particular, business processes have a result that has a value for an internal or external customer (e.g. price of a car) (Lederer & Schott, 2020). The automation of such processes in modeling leads to situations in which processes can now be simulated almost perfectly. During operation, process instances generate a large database that can be used for monitoring, optimization and analysis tasks (Conforti et al., 2015). Examples of this can be found in many primary corporate functions such as purchasing, like automated market observation (Bosch, 2016) and production, like autonomous factories, (Gradeck et al., 2019). Moreover, cases from logistik (tracking and tracing) (Smilansky, 2015), customer consulting (Lederer & Riedl, 2020) are known. Successful examples can also be observed in support functions such as HR (Hamilton & Sodeman, 2020) and (Longbottom, 2012).

An IT-supported execution of processes, however, requires that the supporting software solution (for example the engine, the workflow system, the ERP system or the CRM system) can sensibly record, process and evaluate such large amounts of data. It is therefore not surprising that a large number of classic BPM software manufacturers now use “Big Data” and related features as a sales argument (e.g. SAP, ORACLE). The term first appeared in the years around 1980 and today describes a collection of technologies that are able to process large data sets in a short time and go beyond common standards of digital data processing. In relation to data available in processes, this does not mean classic reports or data analyses in spreadsheets. Rather, we speak of Big Data when unstructured and semi-structured data are also processed and these are diverse, complex and, above all, of massive scope (Mashey, 1998; Lohr, 2013; Salimahz, 2015). Even though the term is subject to permanent change (partly due to technical advances such as process mining), it is still used almost inflationary. So, new players in the BPM software field seem to be interesting for BPM, which have their background primarily in the area of data management and now offer as a service for processes (e.g. Google, Amazon, Salesforce). Recent scientific studies (Hassani & Gahnouchi, 2019; Sakr et al. 2018) also show that the combination of Big Data and BPM is a complex but at the same time very promising field.

Since companies are increasingly investing in data-driven software support, this article addresses the following research question:

RQ1: What are the requirements for BPM software to be described as Big Data solutions?

RQ2: Do current market solutions for BPM meet these requirements?

To answer the research question, requirements for software applications used in process management are defined on the basis of recognized definitions of big data. Currently available BPM solutions are then systematically checked to see whether they can meet the set requirements. Section 2 describes the methodology used and section 3 describes the results.

METHODOLOGY

This study was carried out in two steps. Section 2.1 describes the methodology used to collect the requirements for Big Data features. Section 2.2 describes how the evaluation of available BPM solutions was carried out.

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