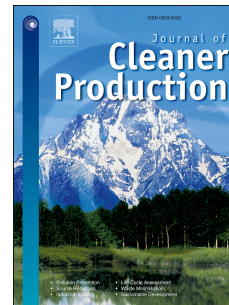


Accepted Manuscript

A framework for Big Data driven product lifecycle management

Yingfeng Zhang, Shan Ren, Yang Liu, Tomohiko Sakao, Donald Huisingh



PII: S0959-6526(17)30915-0

DOI: [10.1016/j.jclepro.2017.04.172](https://doi.org/10.1016/j.jclepro.2017.04.172)

Reference: JCLP 9582

To appear in: *Journal of Cleaner Production*

Received Date: 14 January 2017

Revised Date: 30 March 2017

Accepted Date: 29 April 2017

Please cite this article as: Zhang Y, Ren S, Liu Y, Sakao T, Huisingh D, A framework for Big Data driven product lifecycle management, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.04.172.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A framework for Big Data driven product lifecycle management

Yingfeng Zhang ^{a,b,*}, Shan Ren ^a, Yang Liu ^{c,d,**}, Tomohiko Sakao ^c, Donald Huisingh ^e

^a Key Laboratory of Contemporary Design and Integrated Manufacturing Technology, Ministry of Education, Northwestern Polytechnical University, Shaanxi, P. R. China, 710072

^b Research & Development Institute in Shenzhen, Northwestern Polytechnical University

^c Division of Environmental Technology and Management, Department of Management and Engineering, Linköping University, SE-581 83 Linköping, Sweden

^d Department of Production, University of Vaasa, PL 700, 65101 Vaasa, Finland

^e Institute for a Secure and Sustainable Environment, University of Tennessee, Knoxville, TN, USA

* Corresponding Author: zhangyf@nwpu.edu.cn (Y. Zhang), yang.liu@liu.se (Y. Liu)

Abstract: Optimization of the process of product lifecycle management is an increasingly important objective for manufacturing enterprises to improve their sustainable competitive advantage. Originally, this approach was developed to integrate the business processes of an organization and more effectively manage and utilize the data generated during lifecycle studies. With emerging technologies, product embedded information devices such as radio frequency identification tags and smart sensors are widely used to improve the efficiency of enterprises' routine management on an operational level. Manufacturing enterprises need a more advanced analysis approach to develop a solution on a strategic level from using such lifecycle Big Data. However, the application of Big Data in lifecycle faces several challenges, such as the lack of reliable data and valuable knowledge that can be employed to support the optimized decision-making of product lifecycle management. In this paper, a framework for Big Data driven product lifecycle management was proposed to address these challenges. Within the proposed framework, the availability and accessibility of data and knowledge related to lifecycle can be achieved. A case study was presented to demonstrate the proof-of-concept of the proposed framework. The results showed that the proposed framework was feasible to be adopted in industry, and can provide an overall solution for optimizing the decision-making processes in different phases of the whole lifecycle. The key findings and insights from the case study were summarized as managerial implications, which can guide manufacturers to ensure improvements in energy saving and fault diagnosis related decisions in the whole lifecycle.

Keywords: Maintenance, Service, Macro level analysis, Micro level analysis, Economic impact

Abbreviations

AD	Anomaly detection	MOL	Middle of life
BDD-PLM	Big Data driven product lifecycle management	MRO	Maintenance, repair and overhaul
BOL	Beginning of life	NoSQL	Not only structured query language
BOM	Bill of materials	PDKM	Product data and knowledge management
BPRT	Blast furnace power recovery turbine	PEIDs	Product embedded information devices

Download English Version:

<https://daneshyari.com/en/article/5480935>

Download Persian Version:

<https://daneshyari.com/article/5480935>

[Daneshyari.com](https://daneshyari.com)