Development of Dynamic Key Figures for the Identification of Critical Components in Smart Factory Information Networks

by

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DEVELOPMENT OF DYNAMIC KEY FIGURES FOR THE IDENTIFICATION OF CRITICAL COMPONENTS IN SMART FACTORY INFORMATION NETWORKS

Research in Progress

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Abstract

Informational risks in smart factories arise from the growing interconnection of its components, the increasing importance of real-time accessibility and exchange of information, and highly dynamic and complex information networks. Thereby, physical production more and more depends on functioning information networks due to increasing informational dependencies. Accordingly, the operational capability of smart factories and their ability to create economic value heavily depend on its information network. Thus, information networks of smart factories have to be evaluated regarding informational risks as a first prerequisite for subsequent steps regarding the management of a smart factory. In this paper, we focus on the identification of critical components in information networks based on key figures that quantitatively depict the availability of the information network. To enable analyses regarding dynamic effects, the developed key figures cover dynamic propagation and recovery effects. To demonstrate their applicability, we investigate two possible threat scenarios in an exemplary information network. Further, we integrated the insights of two expert interviews of two global companies in the automation and packaging industry. The results indicate that the developed key figures offer a promising approach to better analyse and understand informational risks in smart factory information networks.

Keywords: Smart Factory, Information Network, Informational Risk, Dynamic Key Figures.