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Inherent schedule buffers: An approach to estimate risk in maintenance and production schedules

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Within the Project Management discipline time buffers are commonly used to reduce the risk of potential schedule delays caused by known tasks in the critical path. Within the Production and Maintenance Scheduling disciplines however, the process of adding time buffers is a more complicated job resulting from the inability to differentiate and estimate the risk levels present within the tasks (orders) in the schedule. In this study, empirical correlations between workloads and process efficiency are used to develop a method to distinguish and estimate periods of higher and lower risk within a production or maintenance schedule. To this end, the baseline schedules for production or maintenance are broken down into periods defined by the number of orders active at the time, and theoretical lead times are calculated to estimate efficiency gains. The differences between the baseline schedule and the theoretical schedule accounting for the performance gains reveals the “Inherent schedule buffers” which in turn are used to estimate the following: The level of inherent risk mitigation present in the schedule, the critical orders (orders with no inherent schedule buffer and increased risk), and necessary measures to mitigate the identified risks.

Biography

Fernando Jaramillo A is a PhD student in Industrial Engineering at the University of Miami, currently working for the Center for Advanced Supply Chain Management (CASCM). His research is focused on the development of mathematical methods, models, and algorithms to optimize and add value in different areas of a supply chain. His industry experience includes biomedical research on cardiovascular prosthetics, manufacturing process engineering, and quality engineering applied to the supply chain in the pharmaceutical industry.

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