

Production Planning ,Scheduling and Risk Analysis in Manufacturing Operations by Robotic Process Automation .

Michael MATONYA^{*} , István BUDAI^{*} , Balázs KOCSI^{**} and László PUSZTAI^{**}

** University of Debrecen, Faculty of Engineering, Department of Engineering Management
and Enterprise.*

*** University of Debrecen, Doctoral School of Informatics.*

December 9, 2019

Abstract.

Over the decade production planning and scheduling operations have been life-sustaining and critical success factors for any competitive manufacturing industries in terms of cost serving, on-time delivery, and high-quality performance. The contemporary market or customers require highly customized and unique products as technology advances. Over a long period of time many companies have been exposed to high operating costs despite the existence of production planning and scheduling techniques available in the market. These challenges are mainly contributed by ineffective planning and scheduling which is triggered and tricked by the dynamic nature of customized products. For the planning and scheduling in manufacturing operations to be effective it highly depends on timely captured production and supply chain information's from various sources. In this paper, the evaluation of current planning, scheduling and risk analysis in manufacturing operations have been done to highpoint mutually the challenges and opportunities accessible. Design of a Hybrid Real-time Decision Support System model which involves advanced and intelligent planning and scheduling techniques and which is implemented by Robotic Process Automation (RPA) has been done to address the challenges. RPA predict the possible potential risks and take into consideration them during the scheduling. The objective is to minimize the total average production cycle time by optimizing the production planning and scheduling in manufacturing industries.

Key words. *Total Cycle time, Decision Support System, RPA, Real time decision, Takt time, Planning, Scheduling, Manufacturing Operations.*