

Abstract

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Evaluating the Impact of Introducing RFID Technology in Manufacturing Systems Using Simulation

radio frequency identification (rfid) technology has significant impact on product tracking identification in manufacturing systems. most of the business cases that implement the rfid technology in their operations have achieved various benefits. rfid technology can reduce the operating errors that affect the efficiency of the operations which results in improving different performance measures such as cycle time, throughput, work-in-process, resources utilization, average waiting time in queues. in addition, several benefits such as improved items monitoring, lower lead times, better inventory control can be achieved by introducing rfid technology. recent developments in rfid technology other supporting technologies have created opportunities for real-time traceability better visibility in shop floor operations. this work investigates the effectiveness of introducing rfid technology in tracking identification processes of products flow in a job shop manufacturing facility. a leading furniture manufacturer in egypt has been used as a case study. the manufacturer produces a large number of customized furniture products. errors in tracking identification usually occur due to the large number of products present on the shop floor. introduction of radio frequency identification technology at different stages of manufacturing is proposed to overcome these errors. different simulation models have been developed for the post-assembly processes in the facility. these models have been developed with an intent to capture all the features that characterize a real furniture manufacturing facility. simulation is used to assess the impact of introducing the rfid technology on a number of performance measures. analysis comparison of simulation results for the base proposed models show that rfid implementation can improve the overall performance of the facility.