

Article Abstract

Title:	A stochastic simulation approach for production scheduling and investment planning in the tile industry
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Abstract:	The present paper aims to develop a simulation tool for tile manufacturing companies. The paper shows how simulation approach can be useful to support management decisions related to production scheduling and investment planning. Particularly the aim is to demonstrate the importance of an information system in tile firms. The Factory Data Model (FDM) parameter is used to describe the activities in ceramic tile industries operating in different European countries. A process- based analysis of tile manufacturers is undertaken and individual company performance is quantified by Key Performance Indicators (KPI). The overall model is composed of different processes, which are coded into Scilab environment and matched together to arrange a stochastic simulator. The simulations results are used to show how management decisions can significantly effect the KPIs. The simulations highlight the effects on KPIs of three specific parameters: the length of scheduling period, the quantity of stock needed and the reliability of the information system supporting orders. The results clearly show that the effect of allowing the presence of unattended orders within the outstanding orders list always has a remarkable negative influence on KPIs. Results also suggest that the presence of sub-groups of homogeneous tiles, based on colour variation, is one of the most important factors affecting a tile manufacturer's performance. The results of the simulations have two different practical implications. Firstly, they demonstrate the importance of information systems in tile companies, suggest to evaluate investment in information technology and indicate the value of promoting an information culture in the entire work forces. Secondly, they show the potential of simulation tools development to support decision making in a BPR (Business Processes Re-engineering) scenario.
Keywords:	Simulation, tiles, information system, investments, management, BPR.