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Developing a Multi Criteria Decision Making Framework to Select the Most Suitable Production Line in Apparel Firms: Use of ANP Method

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Abstract

The apparel industry is considered as one of the most labor-intensive industries where Production Planning and Control (PPC) is considered as an important function, because of its involvement from scheduling each task in the process till the delivery of customer demand. Line planning is a sub process within PPC, through which the production orders are allocated to production lines according to its setting and due dates of production completion. The decisions that address line planning function still heavily rely on the expertise of the production planner. When production planners are required to select production lines for the production of a particular type of product, little emphasis has been placed on ways to apportion certain production orders to the most appropriate production system. In this research, a framework is developed using Analytical Network Process (ANP) which is a Multi Criteria Decision Making (MCDM) method, enabling the incorporation of all the planning criteria in the selection of a production line. The weighted scores obtained by the best alternative production lines are used in a Linear Programming model to optimize the resource allocation in an apparel firm.

Keywords

Apparel Production Planning, Production Line Planning, Multi Criteria Decision Making (MCDM), Analytical Network Method (ANP)

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