UNIVERSITEIT VAN PRETORIA
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DEPARTEMENT BEDRYFS- EN SISTEEMINGENIEURSWESE
DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

FINAL PROJECT SUBMISSION COVER PAGE (BPJ 420)

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Title	Complex production scheduling due to multiple product combinations per machine.
Keywords	Operations Research, Mixed Integer Linear Programing
Abstract	Jumbo Brands, established in 1985, was known as a popular ice popsicle company Jolly Jumbo. Not only the name has changed over the years as their production lines has grown and the type of products that they manufacture. The company only focuses on products for the food industry with items such as vinegar, lemon juice, hot chocolate. The company needs to build up to two weeks' worth of safety stock to be able to fulfil all there clients orders, currently with there Make to Order production scheduling they are struggling to keep up . Operational research (OP) is determined as an appropriate theoretical area in industrial engineering to determine the company's most optimal solution for their production scheduling from their Make to Order system to a Make to Stock system. A literature review is done on the above-mentioned theoretical area as well as on the project approach. In phase one of the problem analysis, industrial engineering techniques such as a fishbone diagram and the Five Whys are used to understand the problem . In the second phase of the problem analysis, research was conducted to understand what other people did when faced with a similar problem area. It was important to understand the different types of models used to obtain a production schedule and to understand what the problem identified requires. The requirement elicitation is done in the literature review to ensure that the most fitting model is used for the project. The chosen model, Mixed integer linear program (MILP), is further explained as well as aspects connected with this specific model. After understanding the models and gathering required data as determined by the problem analysis section it was possible to construct a preliminary solution with an objective function that minimises the amount of changeovers.
Category	Final project report
Confidential?	☐ **Yes** ☒ **No**

Declaration

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3. Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements
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