Make to stock and mix to order: Choosing intermediate products in the food-processing industry

In contrast to discrete manufacturers, food-processing companies can sometimes produce the same end products in different ways: either mix first and then process, or process first and mix later. Moreover, a final product can be mixed from different raw materials or intermediates. That adds a new dimension to postponement and decoupling point theory as choices have to be made not only with regard to where to locate inventory, but also which products to store. That aspect has not been covered so far. This paper explores this problem for a typical two-stage food production situation in a flour mill. The number and composition of intermediate products in the decoupling point is determined using a stepwise solution approach supported by mathematical programming models. The procedure facilitates decision-making for the management of the mill regarding how many and what intermediates to store. Extensions of the models presented might be helpful to solve related problems such as determining the number of intermediate storage tanks required.

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