

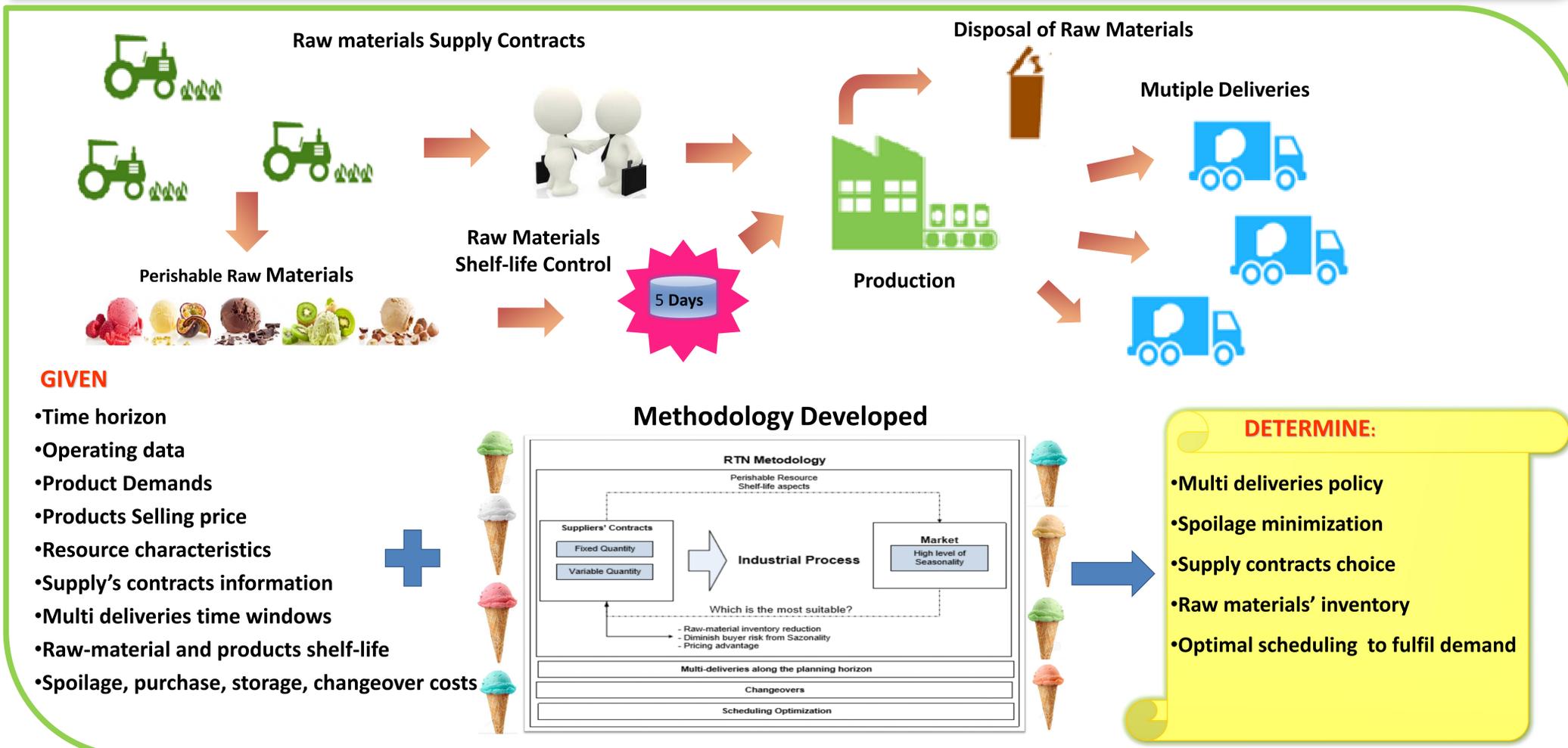
Optimization of Production Planning and Scheduling in the Ice-Cream Industry

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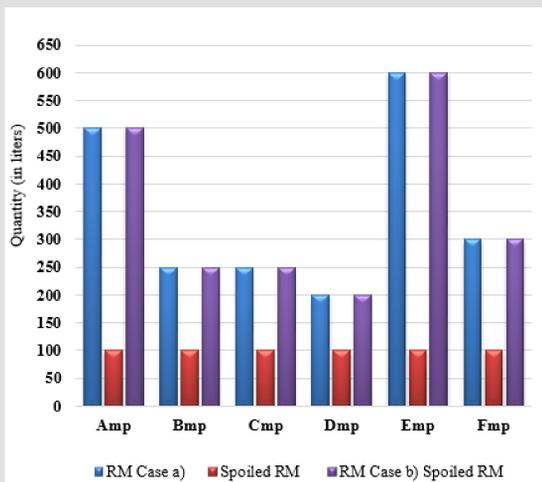
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Summary

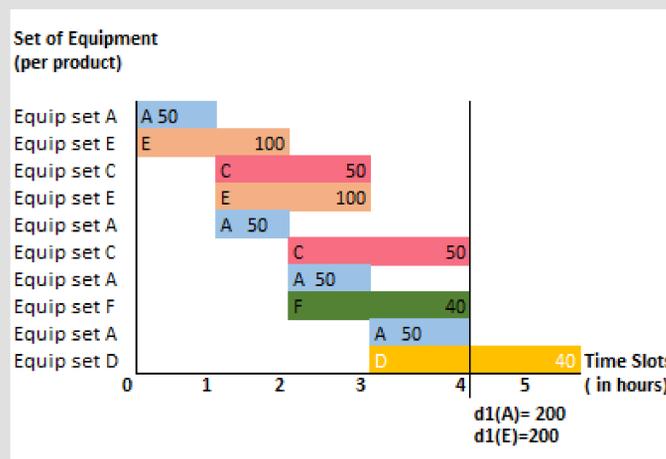
As in other segments of the food industry, the ice-cream industry has its own features that influence the production management of its processes. Amongst these features we identify: changeover tasks, products shelf-life, multiple deliveries and inventory control of perishable raw materials. These aspects have been often left out when studying the production planning and scheduling within the batch food industries. Thus, the aim of this work is to define an optimal planning and scheduling formulation based on the Resource Task Network representation integrating the previous features, where the profit maximization is performed taking into account the perishable raw materials' inventory management. The formulation is explored through two scenarios: a) and b). Scenario a) consider purchasing quantities of fixed perishable raw material exploring economy of scale aspects, while scenario b) purchases variable perishable raw material quantities using just-in-time strategy.



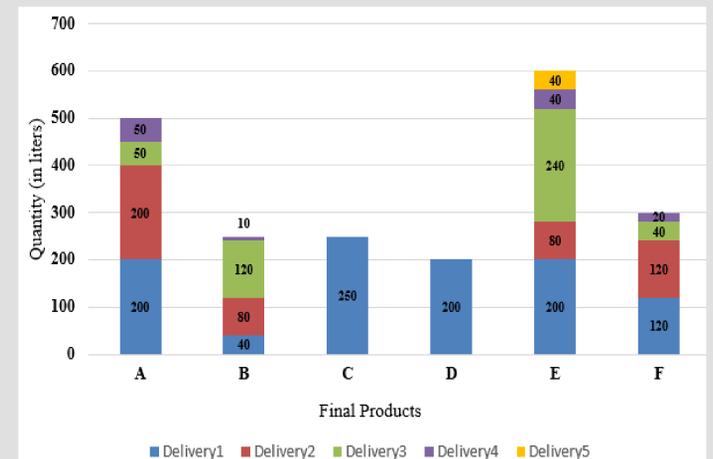
Results



Raw materials consumption/spoiled.



Scheduling of Production



Quantity Delivered per Product

Conclusions

In the present work, the production scheduling problem of a artisanal ice-cream facility considering perishable raw materials' inventory management was studied. A MILP formulation is developed considering the dairy industry features, and two strategies over the raw materials' inventory management are analysed. The results identifies that a JIT approach for purchase as a better strategy to deal with perishable raw materials' inventory management. This strategy, not only presents better economic results, but also allows higher final quality products.