Disassembly to order for perishable items

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Abstract:

Manufacturing systems are usually classified into 4 types (assembly for the order, production order, engineering to order and production for stock), although these four models consider more than ninety percent of the processes there are certain manufacturing processes that cannot be treated with any of the previous models, it is why in this work we propose the need to consider and formalize the "disassembly for order" model. In the proposed manufacturing model, we make considerations on complications disassembly having a product as raw material, especially when the order is only for a specific part of disassembly, reason for which you have to include the Holding cost when it's time to do the costing, we also consider, in order to make a more robust model, the article to disassemble and products will get of it, as are perishable items, which reduce the cost each day they are stored. Finally, the model considers the seasonality of the product, the model assumes that market costs are dynamic and constantly changing, so that the model can (after a while) be able to statistically determine at what price a product should be offered to a specific client in order to move faster and improve profits right through the rapid inventory turnover, lower storage and use of market situations. The pork processing industry resembles a case of disassembly scheduling because a planner needs to decide the pig size and quantity to be supplied to the slaughtering house, as well as the amount of meat and meat size needed to process an order. The meat processing resembles disassembly scheduling for multiple products with parts in commonality. We extend the general disassembly model further to cover product perishability of the meat while allowing demand to occur in other levels of product hierarchy rather than the leaf product (products that are no longer being disassembled). We also allow the model to obtain outsource products to be processed if it achieves a more economical solution. In this study, we developed a mathematical model to determine the quantity and size of pig supplies (root items) and meat cuts (parent/child items) to be processed for an order to minimize the total cost. Computation time and cost of generated test problems are obtained. The application of pork processing plan is demonstrated. Supply chain managers in the retail grocery industry face significant challenges in reducing the wastage of perishable food. Perishable food spoilage and deterioration in the retail grocery industry result in a significant loss of profitability and consumer satisfaction. The purpose of this multiple case study was to explore the strategies that supply chain managers in the retail grocery business used to minimize perishable food loss. The perishable inventory theory was used as the conceptual framework. Data were collected from semi-structured interviews with 6 Pennsylvania retail grocery supply chain managers who implemented strategies to minimize perishable food loss and from organizational documents. Data analysis was carried out using Yin's 5-step process of compiling, disassembling, reassembling, interpreting, and concluding data. The 3 emergent themes resulting from data analysis were inventory strategy, logistics and deliveries strategy, and information technology strategy. Member checking occurred after transcription and summarization of the interview data. The findings indicated that supply chain managers use first-in-first-out approaches to inventory management, rotation, replenishment, information sharing, and on-time purchasing to minimize perishable food loss. The findings and recommendations of this study might be valuable to supply chain management and retail grocery leaders to create strategic solutions to mitigate the loss of perishable food. The findings of this study might contribute to positive social change through the reduction of perishable food loss, an increased supply of food, lower retail prices to the consumer, and improved customer satisfaction.