

Improvement of Inventory Management System in a Teaching Hospital



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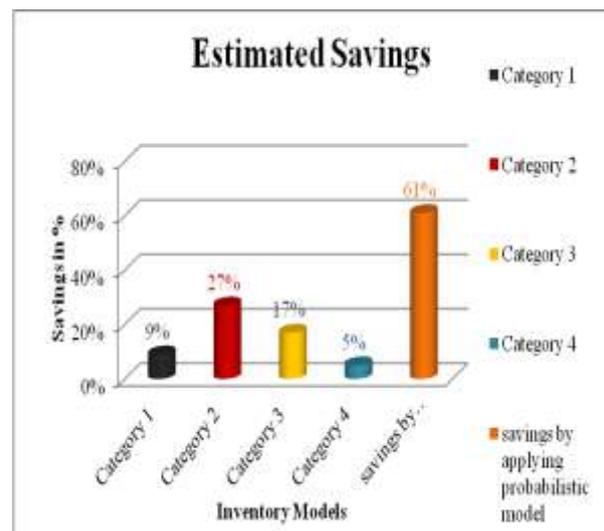
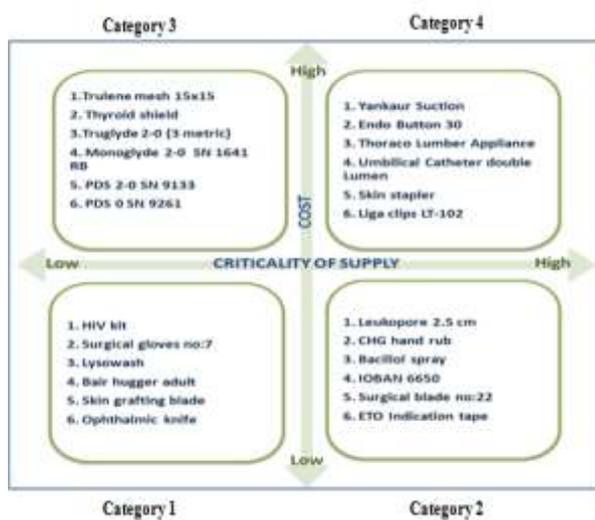
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Abstract:

Inventories contribute a major portion of revenue in an organisation which needs to be managed efficiently in a competitive market. Managing inventories has become more complex since the demand for the products are more uncertain. However, fewer approaches have been reported to manage inventories in service industries. This study investigates the application of mathematical models to manage inventories optimally in a teaching hospital.

In the current project work, a 10 percent improvement in the total inventory cost has been targeted by developing an inventory management system. The data related to inventory has been collected for six months from August 2013 to January 2014. By analysing the data, components have been broadly classified into certain and uncertain demand categories. Kraljic's matrix has been used to further classify products with certain demand. EOQ, Aggregation, Tailored Aggregation, and Quantity Discount models have been used to optimise the costs. Contrarily, products with uncertain demand have been modeled using cycle service level and safety stocks. Comparative analysis has been conducted to show the benefits between developed model and legacy method.

The results revealed 9% savings from EOQ model, 27% savings from Aggregation model, 17% savings from Tailored aggregation model, 5% savings from Quantity Discount model and a savings of 61% from Probability method. The average savings from all the models has been found to be 24% against the targeted 10%. Thus, mathematical models can be successfully applied to service industries and can be used to optimise the inventories. Moreover, the study can be extended to other categories of products in the selected hospital.



Savings from the proposed inventory system