Ideation Phase
Literature Survey

Date	19 September 2022
Team ID	PNT2022TMID17815
Project Name	Inventory Management System for Retailers.
Maximum Marks	4 Marks

1. Mahmood Vahdani, Zeinab Sazvar, Coordinated inventory control and pricing policies for online retailers with perishable products in the presence of social learning, Computers & Industrial Engineering, Volume 168, 2022, 108093, ISSN 0360-8352, doi: 10.1016/j.cie.2022.108093.

    Mahmood *et al. aims* to examine the coordinated dynamic pricing and inventory control problem for a perishable product under social learning. The idea is that online retailers who sell a perishable product under Expiration Date-Based Pricing (EDBP) policy counteract the negative quality inference of this practice through social learning

    Methodology Used :
    - According to Wang and Li
    - products with a fixed lifetime
    - products with a random lifetime
    - products with a decaying lifetime

    Merits :

    Uniform pricing of perishable products, without taking into consideration the remaining time until the expiration date, may gravitate customers towards fresher products and some inventory may remain unsold Mortality rate is also predicted.

    Demerits :

    One can never predict the time that a product will take in each stage of the cycle. Sometimes it becomes difficult to distinguish one stage from another because very few people are keen to pay details of the flow of goods and services in the market.

2. Rajesh Bose, Haraprasad Mondal, Indranil Sarkar, Sandip Roy, Design of smart inventory management system for construction sector based on IoT and cloud computing, e-Prime - Advances in Electrical Engineering, Electronics and Energy, Volume 2, 2022, 100051, ISSN 2772-6711, doi : 10.1016/j.prime.2022.100051.

    Rajesh *et al. a*pproach using their model and show how this can help construction sector in managing inventory of essential form work shuttering products. Although, the background of our research is related to Indian construction companies, the results of our study can be extended to other regions as well.

Methodology Used :
Barcode-based designs by amalgamating such with Cloud Computing, Arduino-based wireless station nodes, IoT and a secure form channel to access data through a dedicated web portal.
Merits :
 Modern inventory management systems have benefitted greatly from barcodes, our research reveals that there could be an opportunity to approach barcode-based designs by amalgamating such with Cloud Computing, Arduino-based wireless station nodes, IoT and a secure form channel to access data through a dedicated web portal.
Demerits :
Barcode do not contain any added information such as expiry date etc. They only contain the manufacturer and product. They are very labour intensive; as they must be scanned individually.

3. Xun Wang, Stephen M. Disney, Borja Ponte, On the stationary stochastic response of an order-constrained inventory system, European Journal of Operational Research, Volume 304, Issue 2, 2023, Pages 543-557, ISSN 0377-2217, doi : 10.1016/j.ejor.2022.04.020

   Xun *et al. s*howed how tuning the con-straint can improve the operational and financial performance of the inventory system by acting as asmoothing mechanism.

   Methodology Used :
   A state space algorithm is developed to approximate the first- and second-order moments of the order quantity and inventory level.
   Merits :
    In particular, the constraint impacts order and inventory variances via different combinations of the mixture and truncation effects. We show how tuning the constraint can improve the operational and financial performance of the inventory system by acting as a smoothing mechanism.
   Demerits :
   Truncation can also seriously distort linear relations between RT and an independent variable, additive RT patterns in factorial designs, and hazard functions, but it has little effect on statistical power.

4. X. Qiao, Z. Wang and H. Chen, "Joint Ordering and Markdown Policy for Short Lifetime Products With Competitive Price- and Freshness-Based Demand," in IEEE Transactions on Automation Science and Engineering, vol. 18, no. 4, pp. 1956-1968, Oct. 2021, doi: 10.1109/TASE.2020.3027302.

   Qiao *et al.* developed a joint ordering and markdown policy for perishable products deployed on two shelves: a regular shelf for fresh products and a markdown shelf for less fresh products.

   Methodology Used :
   - First, Karush–Kuhn– Tucker condition to analytically obtain the optimal solution of the joint ordering and markdown problem.
   - Second, numerical experiments are conducted to evaluate the performance of the two-shelf policy when the optimal solution of the one-period model is applied to the multiperiod problem in the form of a myopic policy.
   - Inventory control, joint ordering and pricing, price–freshness-dependent demand.

Merits :

Easy-to-use method for the retailer to determine the ordering quantity and the markdown policy. The retailer sets two shelves, including the regular shelf for the new products with a preset normal price and the markdown shelf for the old products with a discounted price.

Demerits :

By reducing the price, a markdown makes a product or service more desirable for customers. After a markdown, each unit has a lower profit margin, but overall sales revenues are higher because more units are sold.