Chapter 10

Summary

Chapter 2 provides an inventory model with probabilistic deteriorating rate for various demand functions which are time and price-dependent. In this chapter, average profit function is maximized for finite planning horizon. The optimal order quantity together with the number of transfer per order are obtained in this chapter. Some numerical examples and sensitivity analysis are given to illustrate the model.

Chapter 3 extended the research works of Sana and Chaudhuri's (2008) model [Sana, S. and Chaudhuri, K.S. (2008). A deterministic EOQ model with delays in payments and price-discounts offers. *European Journal of Operational Research*, 184, 509-533.]. The demand function is considered as time and selling-price-dependent. This chapter depicted that suppliers provides a fixed trade-credit-period to retailer. Supplier also provides price-discount strategy on the purchasing amount to the retailer. Retailer's profit function is maximized for finite replenishment rate.

In chapter 4, Mahata's model (2012) [Mahata, G.C. (2012). An EPQ-based inventory model for exponentially deteriorating items under retailer partial trade-credit policy in supply chain. *Expert Systems with Applications*, 39(3), 3537-3550.] is extended with time-varying deterioration. Chap-

ter 4 describes that supplier allows a full trade-credit-period to the retailer. In addition, retailer provided a partial trade-credit-period to customers. In this chapter, cost minimization problem has been solved by using classical optimization method.

Chapter 5 considered that deterioration of products is exponential over time. In addition, supplier allows their retailer a full trade-credit-period and retailer allows their consumers a partial trade-credit-period. This chapter also provided that retailer's cost function is minimized by obtaining the cycle length.

In chapter 6, an imperfect production process is discussed which follows a probabilistic distribution. This chapter states that imperfect products are observed by a product inspection policy. On the other situation, non-inspected imperfect products are shifted to the market for sale with some warranty cost. The expected total cost per item is minimized in this chapter. Some numerical examples and sensitivity analysis are deduced to obtain the applicability of the model.

Chapter 7 discussed about the impact of carbon-emission cost reduction during transporting of products in business organization. Vendor's setup cost is taken to be as variable. Throughout the shipping of items, vendor and buyer highlights two types of carbon-emission costs which are fixed and variable. It is also assumed that delivery lot-sizes are variable and unequal.

In chapter 8, a discrete investment function is added for minimizing vendor's setup cost. This chapter also depicted that transportation cost and carbon-emission cost both are fixed and variable. In this chapter, it is highlighted that buyer added two types of inspection costs at the time of product inspection. Two models one with Stackelberg approach and another without Stackelberg approach are formulated in this chapter along with some numerical examples to provide the optimality of vendor-buyer system's joint total cost.