

Material Requirement Planning

- Jayanagar Chair Co., (JCC) makes office chairs mainly with a steel frame, Plastic-thread work and two beautifully carved wooden arm-rests. The latter are procured from a wood turning shop which supplies JCC with a lead time of five weeks and in a lot size of 2,000 arm-rests.

As per JCC's customers' requirements, the delivery schedule for completed chairs is :

Week No.	1	2	3	4	5	6	7	8	9	10
No. of Chairs Required	-	200	200	-	-	150	500	700	300	380

The wooden chair handles are almost the last item to go into JCC's chairs and the lead time for the final assembly of the chair can be taken as one week.

There are 50 completed chairs in stock in JCC's finished goods' warehouse and 800 wooden handles in the plant's store. Due to the orders placed earlier, 2000 wooden handles are scheduled to arrive in week 4. A safety stock of 50 wooden handle is recommended.

Draw a MRP for the wooden handles.

- X Video Company sells package of blank video types to its customer. It purchases video tapes from Y Tape Company @ ₹ 140 a packet. Y Tape Company pays all freight to X video Company. No incoming inspection is necessary because Y tape Company has a superb reputation for delivery quality merchandise. Annual demand of X Video Co. is 13,000 packages. X Video Co. requires 15% annual return on investment. The purchase order lead-time is two weeks. The purchase order is passed through Internet and its costs ₹ 2 per order. The relevant insurance, material handling etc. ₹ 3.10 per package per year.

X Video Co. has to decide whether or not to shift JIT purchasing. Y tape Company agrees to deliver 100 packages of video tapes 130 times per year (5 times every two weeks) instead of existing delivery system 1,000 packages 13 times a year with additional amount of ₹ 0.02 per package. X video Co. incurs no stock out under its current purchasing policy. It is estimated X Video Co. incurs stock out cost on 50 videotape packages under a JIT purchasing policy. In the event of a stock out X Video Co. has to rush order tape packages which costs ₹ 4 per package. Comment whether X Video Company to implement JIT purchasing system.

Z Co. also supply video tapes in 50 units per order. It agrees to supply @ ₹ 136 per packages under JIT delivery system. If video tape purchased from Z Co., relevant carrying cost would be ₹ 3 per package against ₹ 3.10 in case of purchasing from Y tape Co. However Z Co. doesn't enjoy so sterling reputation for quality. X Video Co. anticipates following negative aspects of purchasing tapes from Z Co.

- To incur additional inspection cost of 5 paise per package.
- Average stock out of 360 tapes packages per year would occur, largely resulting from late deliveries. Z Co. cannot rush order at short notice. X Video Co. anticipates lost contribution margin per package of ₹ 8 from stock out.
- Customer would likely return 2% of all packages due to poor quality of the tape and to handle this return a additional cost of ₹ 25 per package.

Comment whether X Video Co. places order to Z co.

- The annual demand for an items of raw material is 4,000 units and the purchase price is expected to be ₹90 per unit. The relevant incremental cost of processing an order is ₹135 and the relevant cost of storage is estimated to be ₹12 per unit.

- (a) What is the optimal order quantity & the total relevant cost (order & store) of this order quantity ?
- (b) Suppose that the ₹135 estimated of the incremental cost of processing an order is incorrect & should have been ₹80. Assume that all other estimates are correct. What is the cost of this prediction error. Assuming that the solution to part (a) is implemented for one year?
- (c) Assume at the start of the period that a supplier offers 4,000 units at a price of ₹86. The materials will be delivered immediately and placed in the stores. Assume that the incremental cost of placing this order is zero and the original estimate of ₹135 for placing an order for the economic batch size is correct. Should the order be accepted ?
- (d) Present a performance report for the purchasing officer, assuming that the budget was based on the information presented in (a) and the purchasing officer accepted the special order outlined in (c).