

Why

It is often the case that goods can be ordered from suppliers at a lower price if they are purchased in larger quantities. We want to adapt the EOQ model to account for this situation. This also gives us an example of a typical process in OR (Operations Research) and other applications of mathematics - refinement and adaptation of a model to deal with a more complex situation.

LEARNING OBJECTIVES

1. Work as a team, using the team roles
2. Be able to use model an inventory decision question using the EOQ with quantity discounts model
3. Be able to solve the EOQ with quantity discounts model by hand calculation or with use of an Excel template.

CITERIA

1. Success in working as a team and in fulfilling the team roles.
2. Understanding of the material by all team members
3. Success in completing the exercises.

RESOURCES

1. Class notes from Wednesday 11/11
2. Your text – section 8.4
3. Microsoft Excel on the campus network
4. The — worksheet in the inventory.xls workbook available on the text CD and on the Public drive
5. 50 minutes

PLAN

1. Select roles, if you have not already done so, and decide how you will carry out steps 2 and 3
2. Work through the exercises given below you will submit one (team) copy of the work, with the usual reports [see the syllabus]
3. Assess the team's work and roles performances and prepare the Reflector's and Recorder's reports including team grade.
4. Be prepared to discuss your results

EXERCISES

1. The city of Northstar currently uses 100 replacement lamps a month for its streetlights. Each lamp costs the city \$8. Ordering costs are estimated at \$27 per order and the holding cost is 25%. The city now orders at the EOQ, with a safety stock level of 8 lamps. The supplier has offered the city a discount of 2% if the city will but 600 or more lamps at a time. Should the city take the discount? Find the best order quantity and cost by hand (without using the all-units discount sheet in the inventory.xls workbook]
2. Harvey's Heavy Machinery Corp. buys special packing cases for their hydraulic valves. The usual price is \$18 per case, and they use 750 of the cases in a year. The supplier is offering discounts for large orders:

# cases ordered	Price per case
0 – 99	\$18.00
100– 199	\$17.90
200 and up n	\$17.75

The company estimates its holding cost at 20% of price (mainly the cost of capital) , and the cost to place an order at \$40. A safety stock of two cases is maintained to avoid delays in shipping the valves.

- (a) How many packing cases should they order at a time?

- (b) Will the decision change if the company can reduce the ordering cost to \$20 per order?
- (c) Will his best policy change if an increase in interest rates raises the holding cost to 25% of price (with the ordering cost at \$40)?

READING ASSIGNMENT (in preparation for next class meeting)

Sections 8.5 (Production lot size Model)

SKILL EXERCISES:(hand in - individually - at next class meeting)

p.492 # 2, 10, 20, 46 (on CD - .pdf file posted on blackboard – assignments area)