**SCLM 5th Edition**

**End of Book Questions Solution Set**

1a. To determine if EDI will pay for itself within the first five years, we must begin by determining the annual costs associated with the current, manual system over this period:

Yr. (Order volume x cost/order) + (errors x cost/error) = Annual Cost

1 (22,000 x $2.75) = $60,500 + ((22,000 x 0.012) x $7.00) = $ 62,348

2 (25,000 x $2.75) = $68,750 + ((25,000 x 0.012) x $7.00) = $ 70,850

3 (27,000 x $2.75) = $74,250 + ((27,000 x 0.012) x $7.00) = $ 76,518

4 (32,000 x $3.25) = $104,000 + ((32,000 x 0.012) x $7.00) = $ 106,688

5 (38,000 x $3.25) = $123,500 + ((38,000 x 0.012) x $7.00) = $126,692

The cumulative total cost of the manual system is $443,096

Now calculate the cost of EDI over the same period

**EDI System Costs**

Yr. (Order volume x cost/order) + (errors x cost/error) + salary = Annual Cost

0 Upfront implementation cost = $125,000

1 (22,000 x $.35)+((22,000 x 0.003) x $9)+($40,000) = $ 48,294

2 (25,000 x $.35)+((25,000 x 0.003) x $9)+($41,200) = $ 50,625

3 (27,000 x $.35)+((27,000 x 0.003) x $9)+($42,436) = $ 52,615

4 (32,000 x $.35)+((32,000 x 0.003) x $9)+($43,709) = $ 55,773

5 (38,000 x $.35)+((38,000 x 0.003) x $9)+($45,020) = $ 59,346

The cumulative cost of the EDI system is: $ 391,653

By comparing the two total five-year costs, we can see that EDI would pay for itself within the specified period.

Note: This problem, like most other cost comparison problems in the textbook, does not consider the time value of money.

1b. This is a creative thinking question. Responses might include but are not limited to: improved customer service through increased productivity, higher order accuracy, and better order tracking. Mr. McNealy might also expect improved relations with all channel members through better coordination and cooperation in the order process and delivery.

2. Order placement as orders wait to be bundled for processing. However, the decision should consider customer service requirements. Batch processing better enables a supplier to allocate current inventory, yet real-time processing is more responsive.

3. This is a creative thinking question. Responses may include but are not limited to: Point-of-Sale applications can help Fast Stop track sales, reducing inventory uncertainty and the need for buffer stock, and readily provide strategic marketing information. Material handling and tracking applications provide valuable information regarding the movement, storage, shipment and receipt of product. All of these benefits may have cost and customer service implications.

4a. June’s anticipated demand at each DC is show below:

# DC location Historical % x Aggregate Demand = DC Demand

Los Angeles (25% x 12,000) = 3,000 pairs

Memphis (30% x 12,000) = 3,600

Cleveland (35% x 12,000) = 4,200

Overland Park (10% x 12,000) = 1,200

# TOTAL 12,000 pairs

4b. The aggregate forecast for July is 12,720 pairs of socks (12,000 x 1.06). July’s anticipated demand at each DC is shown below:

**DC location Historical % x Aggregate Demand = DC Demand**

Los Angeles (25% x 12,720) = 3,180 pairs

Memphis (30% x 12,720) = 3,816

Cleveland (35% x 12,720) = 4,452

Overland Park (10% x 12,720) = 1,272

# TOTAL 12,720 pairs

5a. To find the forecasted sales for the third quarter of 2016 under the moving averages technique, sum the actual sales from quarter 4 or 2015 and quarters 1 and 2 of 2016 and divide by 3:

FQtr3,00 = 900 + 1600 + 900 = 1,133 Units

3

5b. The forecasts of 2016 quarterly sales by exponential smoothing (α = 0.10) are:

Ft: 2016, Qtr. 1 = 0.10 (900) + 0.90 (900) = 910

2016, Qtr. 2 = 0.10 (1600) + 0.90 (910) = 949

2016, Qtr. 3 = 0.10 (900) + 0.90 (949) = 934

2016, Qtr. 4 = 0.10 (300) + 0.90 (934) = 866

5c. The revised forecasts for the 2016 sales by exponential smoothing (α = 0.20) are:

Ft: 2016, Qtr. 1 = 0.20 (900) + 0.80 (900) = 920

2016, Qtr. 2 = 0.20 (1600) + 0.80 (920) = 996

2016, Qtr. 3 = 0.20 (900) + 0.80 (996) = 957

2016, Qtr. 4 = 0.20 (300) + 0.80 (957) = 816

Students should note that higher alpha values place more emphasis on the previous period’s actual results and less on the previous period’s forecast. In our case it appears to have made the forecasts more sensitive to actual fluctuation though not necessarily more accurate.

5d. The moving averages and simple exponential smoothing techniques do not work well in Ms. Boyd’s situation. Ms. Boyd’s product experiences a seasonal fluctuation that is ineffectively represented in both simple techniques. Adding a seasonality factor would help. Regression analysis with seasonal dummy variables and ratio-to-moving averages techniques more adequately perform forecasts with seasonal variations.

6a. Compare costs associated with the two alternative plans:

Old system New System

Monthly Inventory Carrying Cost: $3,500 $2,275\*

Additional systems costs (monthly): 0 1,500

Total associated monthly costs: $3,500 $3,600

\*Found by reducing the old system’s monthly cost by 35% ($3,500 x (1.0-.0.35)) = 2,275

By Mr. Gregory’s estimations, he should not implement the system improvements for a monthly loss of $100 ($3,500 - $2,600).

6b. This is a creative thinking question. Reponses may include but are not limited to: Evaluation of lower cost systems that product a higher reduction rate to monthly inventory carrier cost

7. Determine the the reorder point for spatulas

R = D x T + SS

= 500 x 21 + 750

= **11,250 spatulas**