OPMA-5368-001-GLOBAL SUPPLY CHAIN MANAGEMENT

CASE STUDY – 2

SUBMITTED BY:

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Under the Guidance Of

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A1.] In the current environment, TE's current order quantity of 2000 units does not minimize the total annual inventory cost (TAIC). Our suggestion would be to go ahead with economic order quantity (EOQ), which is 3400 units, that minimizes the ordering and holding costs. By ordering in quantities of 3400 units, TE can reduce the total annual inventory cost from $9.925M to $9.903M, a savings of $22,000 annually.

A2.] Given the current safety stock level of 689 units, TE is operating at an 81% service level, which is lower than the desired 99% service level by Fred. To achieve a 99% service level, TE should carry a safety stock of 1826 units, based on the current scenario with the EOQ of 3400 units. With a safety stock of 1826 units, the suggested reorder point would be 3386 units. Increasing the safety stock level from 689 units to 1826 units would increase the annual holding cost from $45,000 to $76,500, but this increase would be offset by the decrease in the annual ordering cost from $130,000 to $76,471, resulting in an overall lower TAIC of $9.903M.

A3.] For the proposed alternative with an EOQ of 3800 units and a safety stock of 616 units, the TAIC would be $9.921M. While this is lower than the current TAIC of $9.925M, it is higher than the TAIC of $9.903M achieved by maintaining an EOQ of 3400 units and a safety stock of 1826 units. However, the difference between the cost is not high, and if we choose Mr. Flint proposal we need to carry less inventory and safety stock comparatively, which would be beneficial in many ways.

FINAL RECOMMENDATION: Based on the analysis, I would recommend continuing with the current scenario of inter-modal method of transportation for #TED10GB but instead of ordering 2000 units going with the EOQ of 3400 units and maintaining a safety stock of 1826 units. While this approach increases the safety stock 2.7 times and the space required to store compared to the current scenario with 689 units but minimizes the TAIC while achieving the desired service level of 99%. If the company is fine with storing more inventory, then this is the desired option to go with and if the aim is to minimize the safety stock, then the direct truck proposal would be the best option. Here the only difference is in the amount the money saved annually would be more in intermodal with EOQ which amounts to $22000 whereas in direct truck it is $4000 compared to current situation.

Parameter	Current with Q=2000 units	Current scenario with Q*(EOQ)	Proposal by Mr.Flint
AnnualDemand	65000	65000	65000
Unit cost	$ 150.00	$ 150.00	$ 150.00
Ordering Cost	4000	4000	**5000**
Holding cost(30% of Unit price)	$ 45.00	$ 45.00	$ 45.00
Order Qty(Q)	2000	-	-
EOQ(Q*)	-	3400	3800
Maximum Inventory	2000	3400	3800
No. of orders	33	20	18
Annual holding cost	$ 45,000.00	$ 76,500.00	$ 85,500.00
Annual ordering cost	$ 130,000.00	$ 76,471.00	$ 85,527.00
Annual unit cost	$ 9.75M	$ 9.75M	$ 9.75M
Total Annual cost(TAIC)	**$ 9.925M**	**$ 9.903M**	**$ 9.921M**
Average Daily demand	260	260	260
Std deviation of daily demand	35	35	35
Avg lead time(days)	6	6	2
Std deviation of lead time	3	3	1
Service level	**81%**	**99%**	**99%**
Safety Stock	**689**	**1826**	**616**
Reorder Point	**2249**	**3386**	**1136**

Table - Comparison between cost for different inventory management models.