

Case 7

BLACKHEATH MANUFACTURING COMPANY

Blackheath Manufacturing produced a single product called the Great Heath. During the past three weeks Lee High, the new cost accountant, had observed that production efficiency and input prices were constant but that output varied considerably. These three weeks were thought of as typical by the salesman who said that they could be taken as average. Production costs were accumulated and accounted for under seven different groups listed below:

	<i>Units of Output</i>	<i>Direct Materials</i>	<i>Direct Labor</i>	<i>Indirect Labor</i>	<i>Indirect Materials</i>	<i>Electricity</i>	<i>Factory Insurance</i>	<i>Other Overhead</i>
Week1	400	\$300	\$550	\$180	\$300	\$115	\$125	\$310
Week2	500	375	625	200	300	125	125	360
Week3	600	450	750	220	300	135	125	410

Lee High thought that this would be an ideal time to do some cost analysis on the Great Heath. Based on the data for three weeks' production cost he felt it would be possible to identify fixed costs, variable costs, and semivariable costs. Furthermore, Lee wanted to develop some equations which might be useful for managerial decision making. From such equations it seemed that break-even volume could be generated. Since production was usually based on orders actually received and since products were shipped immediately upon completion, inventories of work-in-process and finished goods were practically nonexistent. When talking to the salesman Lee discovered that on typical orders the selling price of Great Heath was \$7.00. During lunch one day, Lee was told by the president that office expenses including certain selling items were fixed at \$781 per week.

Lee High decided to begin his analysis with income statements for the three weeks:

	<i>Week 1</i>	<i>Week 2</i>	<i>Week 3</i>
Sales	\$2,800	\$3,500	\$4,200
Cost of goods sold	<u>1,830</u>	<u>2,110</u>	<u>2,390</u>
Gross Margin	970	1,390	1,810
Less: other expenses	<u>1,061</u>	<u>1,131</u>	<u>1,201</u>
Net income	<u>(91)</u>	<u>259</u>	<u>609</u>

From these statements Lee realized that selling more added to profit. He also realized that cost of goods sold per unit seemed to fall as output rose:

when sales were 400 then cost of goods sold per unit was \$4.57
when sales were 500 then cost of goods sold per unit was \$4.22
when sales were 600 then cost of goods sold per unit was \$3.98

Lee wasn't sure why cost of goods sold per unit should fall, because, after all, the efficiency and input prices had remained the same. He reasoned that there was something odd about the data and decided it would be good to work with some average. Since the three weeks for which Lee had data were thought to be typical, he decided that some "standardized cost information" based on sales of 500 units per week would be very helpful. He derived the following chart:

Useful Data on Great Heath	
Average variable cost per unit produced	\$2.80
Average fixed cost per unit produced	<u>1.42</u> 4.22
Average fixed administrative and selling cost per unit	1.56
Commission per unit sold	<u>.70</u> 6.48
Added amount for rounding error and some "funny" results in data	<u>.12</u> <u>\$6.60</u>

The following should be kept in mind when selling Great Heath:

1. It costs us \$6.60 to deliver a unit of Great Heath so we make only 40 cents per unit at \$7.00 selling price.
2. Decision rule #1 (for salesmen on the road): Never sell Great Heath for less than \$6.60 plus a profit margin because at \$6.60 we just break even.
3. Decision rule #2 (for direct office sales on which no commission is paid): Never sell Great Heath for less than \$5.90 plus a profit margin because at \$5.90 we just break even.

Lee was very pleased with his chart, particularly the part about different decision rules. When the chart was finished Lee passed it on to Mr. Charlton Blackheath, who was the owner, president and chief decision maker at Blackheath Manufacturing. Charlton, who was skeptical of "scientific analysis," studied Lee High's chart and underlying data. That night Charlton said to his lawyer, with whom he was having dinner, "I have finally found the kind of practical fast-track analyst I need. This kid, Lee High, has just developed a set of decision rules which will solve all my pricing and profit problems."

The next day Charlton Blackheath sent a memo to the salesman and others who were involved in pricing Great Heath. Among other things the memo stated, "Everyone should study Mr. High's chart, especially the decision rules he has generated through complex cost accounting procedures. From now on, all pricing decisions will follow these rules and under no condition will we price at less than 10% above our delivery cost. Therefore, the lowest prices that can be quoted by the salesmen and office force are \$7.26/unit and \$6.49/unit, respectively. This new policy means the salesman had better stop taking orders at \$7.00 per unit."

When he read the memo Lee was both pleased and a bit disturbed. In the first place, he didn't expect Mr. Blackheath to take his chart so seriously; in the second place, he knew intuitively that any price higher than \$7.00 per unit for Great Heath was too high. Lee explained his position to Mr. Blackheath who in turn informed the salesman that orders at \$7.00 would be OK but nothing less would be accepted.

After this revision in policy Lee felt better, Blackheath went on vacation, the salesman was confused, and the members of the office force, who could take orders by phone, were pleased with their new role.

During the next week the following four sales prospects were available to Blackheath Manufacturing for Great Heath.

1. The salesman sold 450 units at \$7.00 per unit.
2. The salesman turned down a request from an irregular customer for 50 units at \$6.50 per unit because of the \$7.00 rule.
3. One telephone order was accepted for \$6.50 per unit for 80 units but another order was rejected at \$5.75 per unit for 50 units because of the \$6.49 rule.
4. Ms. Adelaide Ladywell, a nineteen-year-old file clerk, received a phone call from Maze Woolwich when no one else was in the office. Maze said that he had seen Lee High's data on costs and since Blackheath could produce more economically than Woolwiches, he wanted to order 100 units at \$5.50. Furthermore, Maze explained that since he was going out of business this would be his only order. Adelaide said that \$6.50 was the minimum price, but Maze responded that that was just Blackheath double-talk. Ms. Ladywell looked over the data and realized that on a special order like this \$5.50 would be a good price considering that otherwise Maze Woolwich would produce the 100 units himself. She accepted the order and anticipated a promotion when Mr. Blackheath returned.

At the end of the week Lee High prepared the following sales-cost report for Mr. Blackheath.

<i>Source</i>	<i># of Units</i>	<i>Price/Unit</i>	<i>Cost/Unit</i>	<i>Profit/Unit</i>
<i>Orders We Accepted</i>				
From salesman	450	\$7.00	\$6.60	\$.40
Office manager	80	6.50	5.90	.60
Adelaide Ladywell	100	5.50	5.90	(.40)
<i>Orders we Rejected</i>				
From salesman	50	6.50	6.60	(.10)
Office manager	50	5.75	5.90	(.15)

After Mr. Blackheath looked over the report he did two things:

1. He called in the salesman and explained that it would be better for the company to sell 350 units at \$8.00/unit than the 450 at \$7.00/unit. He went on to say that at \$8.00/unit he would pay a commission of 15% instead of 10%. His reasoning was as follows:

\$8.00	Revenue	\$7.00	Revenue
	Cost per unit per Lee's		Cost per unit per Lee's
<u>5.90</u>	chart	<u>5.90</u>	chart
2.10	Contribution	1.10	Contribution
<u>1.20</u>	Commission	<u>.70</u>	Commission
<u>.90</u>	Clear profit per unit	<u>.40</u>	Clear profit per unit
	350 units times 90 per		450 units times .40 unit
	unit equals \$315 profit		equals \$180 profit per
	per week		week

The salesman was instructed to sell at \$8.00 and guaranteed at least a commission of 15% on the sales of 350 units.

2. Blackheath fired Adelaide Ladywell over the Maze Woolwich mess. He said, "No one is going to cause me to lose 40 cents per unit."

What do you think about the whole situation? Develop a proper set of decision rules.