

# Classic Pen Company: Developing an ABC Model

## The Classic Pen Company Case

Jane Dempsey, controller of the Classic Pen Company, was concerned about the recent financial trends in operating results. Classic Pen had been the low-cost producer of traditional BLUE pens and BLACK pens. Profit margins were over 20% of sales.

Several years earlier Dennis Selmor, the sales manager, had seen opportunities to expand the business by extending the product line into new products that offered premium selling prices over traditional BLUE and BLACK pens. Five years earlier RED pens had been introduced, which required the same basic production technology but could be sold at a 3% premium. And last year PURPLE pens had been introduced because of the 10% premium in selling price they could command.

But Dempsey had just seen the financial results (see Exhibit 1) for the most recent fiscal year and was keenly disappointed.

The new RED and PURPLE pens do seem more profitable than our BLUE and BLACK pens, but overall profitability is down and even the new products are not earning the margins we used to see from our traditional products. Perhaps this is the tougher global competition I have been reading about. At least the new line, particularly PURPLE pens, is showing much higher margins. Perhaps we should follow Dennis' advice and introduce even more specialty colored pens. Dennis claims that consumers are willing to pay higher prices for these specialty colors.

Jeffrey Donald, the manufacturing manager, was also reflecting on the changed environment at Classic Pen:

Five years ago, life was a lot simpler. We produced just BLUE and BLACK pens in long production runs, and everything ran smoothly, without much intervention. Difficulties started when the RED pens were introduced and we had to make more changeovers. This required us to stop production, empty the vats, clean out all remnants of the previous color, and then start the production of the red ink. Making black ink was simple; we didn't even have to clean out the residual blue ink

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*Professor Robert S. Kaplan prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.*

from the previous run if we just dumped in enough black ink to cover it up. But for the RED pens, even small traces of the blue or black ink created quality problems. And the ink for the new PURPLE pens also has demanding specifications, but not quite as demanding as for RED pens.

We seem to be spending a lot more time on purchasing and scheduling activities and just keeping track of where we stand on existing, backlogged, and future orders. The new computer system we got last year helped a lot to reduce the confusion. But I am concerned about rumors I keep hearing that even more new colors may be introduced in the near future. I don't think we have any more capability to handle additional confusion and complexity in our operations.

## **Operations**

Classic produced pens in a single factory. The major task was preparing and mixing the ink for the different colored pens. The ink was inserted into the pens in a semiautomated process. A final packing and shipping stage was performed manually.

Each product had a bill of materials that identified the quantity and cost of direct materials required for the product. A routing sheet identified the sequence of operations required for each operating step. This information was used to calculate the labor expenses for each of the four products. All of the plant's indirect expenses were aggregated at the plant level and allocated to products based on their direct labor content. Currently this overhead burden rate was 300% of direct labor cost. Most people in the plant recalled that not too many years ago the overhead rate was only 200%.

## **Activity-Based Costing**

Jane Dempsey had recently attended a seminar of her professional organization in which a professor had talked about a new concept, called activity-based costing (ABC). This concept seemed to address many of the problems she had been seeing at Classic. The speaker had even used an example that seemed to capture Classic's situation exactly.

The professor had argued that overhead should not be viewed as a cost or a burden to be allocated on top of direct labor. Rather, the organization should focus on activities performed by the indirect and support resource of the organization and try to link the cost of performing these activities directly to the products for which they were performed.

Dempsey obtained several books and articles on the subject and soon tried to put into practice the message she had heard and read about.

## **Activity-Based Cost Analysis**

Dempsey first identified six categories of support expenses that were currently being allocated to pen production:

<u>Expense Category</u>	<u>Expense</u>
Indirect Labor	\$20,000
Fringe Benefits	16,000
Computer Systems	10,000
Machinery	8,000
Maintenance	4,000
Energy	2,000
Total	\$60,000

She determined that the fringe benefits were 40% of labor expenses (both direct and indirect) and would thus represent just a percentage markup to be applied on top of direct and indirect labor charges.

Dempsey interviewed department heads in charge of indirect labor and found that three main activities accounted for their work. About half of indirect labor was involved in scheduling or handling production runs. This included scheduling production orders, purchasing, preparing, and releasing materials for the production run, first-item inspection performed every time the process was changed over, and some scrap loss at the beginning of each run until the process settled down. Another 40% of indirect labor was required just for the physical changeover from one color pen to another.

The time to change over to BLACK pens was relatively short (about 1 hour) since the previous color did not have to be completely eliminated from the machinery. Other colors required longer changeover times; RED pens required the most extensive changeover to meet the demanding quality specification for this color.

The remaining 10% of the time was spent maintaining records on the four products, including the bill of materials and routing information, monitoring and maintaining a minimum supply of raw materials and finished goods inventory for each product, improving the production processes, and performing engineering changes for the products.

Dempsey also collected information on potential activity cost drivers for Classic's activities (see Exhibit 2) and the distribution of the cost drivers for each of the four products.

Dempsey next turned her attention to the \$10,000 of expenses to operate the company's computer system. She interviewed the managers of the Data Center and the Management Information System departments and found that most of the computer's time (and software expense) was used to schedule production runs in the factory and to order and pay for the materials required in each production run.

Since each production run was made for a particular customer, the computer time required to prepare shipping documents and to invoice and collect from a customer was also included in this activity. In total, about 80% of the computer resource was involved in the production run activity. Almost all of the remaining computer expense (20%) was used to keep records on the four products, including production process and associated engineering change notice information.

The remaining three categories of overhead expense (machine depreciation, machine maintenance, and the energy to operate the machines) were incurred to supply machine capacity to produce the pens. The machines had a practical capability of 10,000 hours of productive time that could be supplied to pen production.

Dempsey believed she now had the information to estimate an activity-based cost model for Classic Pen.

**Exhibit 1 Traditional Income Statement**

	<b>Blue</b>	<b>Black</b>	<b>Red</b>	<b>Purple</b>	<b>Total</b>
Sales	\$75,000	\$60,000	\$13,950	\$1,650	\$150,600
Material Costs	25,000	20,000	4,680	550	50,230
Direct Labor	10,000	8,000	1,800	200	20,000
Overhead @300%	30,000	24,000	5,400	600	60,000
Total Operating Income	\$10,000	\$8,000	\$2,070	\$300	\$20,370
<b>Return on Sales</b>	13.6%	13.3%	14.8%	18.2%	13.5%

**Exhibit 2 Direct Costs and Activity Cost Drivers**

	<b>Blue</b>	<b>Black</b>	<b>Red</b>	<b>Purple</b>	<b>Total</b>
Production Sales Volume	50,000	40,000	9,000	1,000	100,000
Unit Selling Price	\$1.50	\$1.50	\$1.55	\$1.65	
Materials-unit cost	\$0.50	\$0.50	\$0.52	\$0.55	
Direct labor hrs/unit	0.02	0.02	0.02	0.02	2,000
Machine hours/unit	0.1	0.1	0.1	0.1	10,000
Production runs	50	50	38	12	150
Setup time/run	4	1	6	4	
Total setup time (hours)	200	50	228	48	526
Parts administration	1	1	1	1	4