

## **Activity Based Costing Project**

### *Autotech Manufacturing Product Costs*

Autotech Manufacturing is engaged in the production of replacement parts for automobiles. One plant specializes in the production of two parts: Part 127 and Part 234. Part 127 produces the highest volume of activity, and for many years it was the only part produced by the plant. Five years ago, Part 234 was added. Part 234 was more difficult to manufacture and required special tooling and setups. Profits increased for the first three years after the addition of the new product. In the past two years, however, the plant has faced intense competition, and its sales of Part 127 have dropped. In fact, the plant showed a small loss in the most recent reporting period. Much of the competition was from foreign sources, and the plant manager was convinced that the foreign producers were guilty of selling the part below the cost of producing it. The following conversation between Patty Goodson, plant manager, and Joseph Fielding divisional marketing manager, reflects the concerns of the division about the future of the plant and its products.

**Joseph:** You know, Patty, the divisional manager is really concerned about the plant's trend. He indicated that in this budgetary environment, we can't afford to carry plants that don't show a profit. We shut one down just last month because it couldn't handle the competition.

**Patty:** Joe, you and I both know that Part 127 has a reputation for quality and value. It has been a mainstay for years. I don't understand what's happening.

**Joseph:** I just received a call from one of our major customers concerning Part 127. He said that a sales representative from another firm offered the part at \$20 per unit-- \$11 less than what we charge. It's hard to compete with a price like that. Perhaps the plant is simply obsolete.

**Patty:** No. I don't buy that. From my sources, I know we have good technology. We are efficient. And it's costing a little more than \$21 to produce that part. I don't see how these companies can afford to sell it so cheaply. I'm not convinced that we should meet the price. Perhaps a better strategy is to emphasize producing and selling more of Part 234. Our margin is high on this product, and we have virtually no competition for it.

**Joseph:** You may be right. I think we can increase the price significantly and not lose business. I called a few customers to see how they would react to a 25 percent increase in price, and they all said that they would still purchase the same quantity as before.

**Patty:** It sounds promising. However, before we make a major commitment to Part 234, I think we had better explore other possible explanations. I want to know how our production costs compare with those of our competitors. Perhaps we could be more efficient and find a way to earn our normal return on Part 127. The market is so much bigger for this part. I'm not sure we can survive with only Part 234. Besides, my production people hate that part. It's very difficult to produce.

After her meeting with Joseph, Patty requested an investigation of the production costs and comparative efficiency. She received approval to hire *Sergeant Consulting Group* to make an independent investigation.

The staff accountant for *Sergeant Consulting Group* has uncovered the following costs and activities associated with the two products.

	Part 127	Part 234
Production	500,000	100,000
Selling Price	\$31.86	\$24.00
Prime costs per unit	\$9.53	\$8.26
Number of production runs	100	200
Receiving orders	400	1,000
Machine hours	125,000	60,000
Direct labor hours	250,000	22,500
Engineering hours	5,000	5,000
Material moves	500	400

Overhead is allocated using a plant-wide rate based on direct labor hours.

Preliminary analysis of costs by *Sergeant Consulting Group* revealed that similar costs can be categorized into the following cost pools. Setup costs are costs that occur each time a new production run is made. They involve retooling and reconfiguring the machines and technology. Material handling costs include the equipment and personnel required to transport materials from supplier trucks to the machines. Typically, materials are taken to a storage area before being transported to machines. Each production run will need new materials and materials may also be transported during production runs. Machine costs primarily include depreciation and machine maintenance. Although the machines are depreciated using accelerated depreciation schedules, typically the machine wear out from use and are replaced before they become obsolete. Receiving costs include the costs of clerical and technical help associated with the processing of each order received from a customer. Engineering costs include the technical support staff that implement design changes in the part, manage processes to maintain quality, and provide technical information on the product. The engineering staff maintain a record of the amount of time spent on each product. General plant costs include all the other administrative costs not included in the other cost pools.

<u>Overhead Cost Pools</u>	
Setup costs	\$240,000
Material handling costs	900,000
Machine costs	1,750,000
Receiving costs	2,100,000
Engineering costs	1,500,000
General plant costs	<u>500,000</u>
Total	\$6,990,000

(This case is taken from Hansen, Mowen and Guan, "Cost Management: Accounting and Control" sixth edition, South-Western Cengage Learning, 2009, problem 4-17, pp. 122-123.)

## ABC Project-Analysis

Part 1: Compute overhead and gross margin using traditional costing

Per Unit	Part 127	Part 234
Overhead/unit	\$ _____	\$ _____
Gross Margin:		
Selling Price/unit	\$ _____	\$ _____
Prime costs/unit	\$ _____	\$ _____
Overhead/unit	\$ _____	\$ _____
Gross margin/unit	\$ _____	\$ _____
<b>Total</b>	<b>Part 127</b>	<b>Part 234</b>
Total Profit	\$ _____	\$ _____

Part 2: Select the best cost driver and compute overhead rates for each cost pool.

Cost pool	Cost Driver	Overhead rate
Setup costs	_____	\$ _____
Material handling costs	_____	\$ _____
Machine costs	_____	\$ _____
Receiving costs	_____	\$ _____
Engineering costs	_____	\$ _____
General plant costs	_____	\$ _____

Part 3: Compute overhead and gross margin using Activity-based Costing

Per Unit	Part 127	Part 234
Overhead/unit	\$ _____	\$ _____
Gross Margin:		
Selling Price/unit	\$ _____	\$ _____
Prime costs/unit	\$ _____	\$ _____
Overhead/unit	\$ _____	\$ _____
Gross margin/unit	\$ _____	\$ _____
<b>Total</b>	<b>Part 127</b>	<b>Part 234</b>
Total Profit	\$ _____	\$ _____

Part 4: Recommendations- Increase in price for Product 234 by 25%

<u>Per Unit</u>	<u>Part 127</u>	<u>Part 234</u>
Selling Price/unit	\$ _____	\$ _____
Prime costs/unit	\$ _____	\$ _____
Overhead/unit	\$ _____	\$ _____
Gross margin/unit	\$ _____	\$ _____
<u>Total</u>	<u>Part 127</u>	<u>Part 234</u>
Total Profit	\$ _____	\$ _____

Part 5: Another reasonable recommendation to improve profitability.  
Explain recommendation here:

<u>Per Unit</u>	<u>Part 127</u>	<u>Part 234</u>
Selling Price/unit	\$ _____	\$ _____
Prime costs/unit	\$ _____	\$ _____
Overhead/unit	\$ _____	\$ _____
Gross margin/unit	\$ _____	\$ _____
<u>Total</u>	<u>Part 127</u>	<u>Part 234</u>
Total Profit	\$ _____	\$ _____

Part 6: Another reasonable recommendation to improve profitability.  
Explain recommendation here:

<u>Per Unit</u>	<u>Part 127</u>	<u>Part 234</u>
Selling Price/unit	\$ _____	\$ _____
Prime costs/unit	\$ _____	\$ _____
Overhead/unit	\$ _____	\$ _____
Gross margin/unit	\$ _____	\$ _____
<u>Total</u>	<u>Part 127</u>	<u>Part 234</u>
Total Profit	\$ _____	\$ _____

## **ABC Project-Writeup**

You are to assume you are a consultant working for the company. You will want your report to be professional and “ADD VALUE” to the company. Use an executive summary, followed by the detailed report.

### **Be sure to include the following:**

- (1) Argue for the use of Activity-based Costing by in this case by:
  - a) Describing when Activity-based Costing is appropriate and when Traditional Costing is appropriate and when each is not appropriate to use.
  - b) Discussing what are the strengths and weaknesses of ABC? When is it appropriate to use? What kinds of business situations suggest the need for ABC?
  - c) Applying a & b to the case and arguing for an Activity-based Costing system.
- (2) Describe the Activity-based costing system you are recommending. Include a justification for the cost driver selected.
- (3) Present your new cost findings. Include both per unit and total cost data. There should be tables with cost information included.
- (4) Make strategy recommendations for each product and for the plant. Use the cost and profit numbers to justify these recommendations.
- (5) Comment on the validity of the plant manager’s concern that competitors are selling below the cost of making Part 127.
- (6) Explain the apparent lack of competition for Part 234 and the customers’ response to potential price increase.
- (7) Make any other additional recommendations or suggestions.

## **Written Document Instructions**

**Cover page for first submission:** A cover page has been provided for your use for the first submission. Do not use a cover page for the final submission.

**The project (beyond the cover page) should start with an executive summary.** This is a **one-page** summary of your findings and conclusions that can stand alone. It should provide links to where more in-depth analysis is found in the paper. One easy way to structure your executive summary is to use a memo template from Word. Keep in mind that your boss might read your entire report, but your boss’s boss might only read the executive summary. Your conclusions should JUMP out at the reader. You can use bullets, bold, tables, and any other formatting tool to enhance the readability of the report.

**After the executive summary, you will write the report.** The report will include the analysis provided in the class. You will need to integrate it into the report neatly and professionally with appropriate descriptions and details. If you have multiple pages and think a table of contents would be helpful, you may use one. You will need to address all seven points above.