

Case 09-1: Cost-Volume-Profit Analysis and Strategy

Mr. Carter is the manager of Simmons Farm and Seed Company, a wholesaler of fertilizer, seed, and other farm supplies. The company has been successful in recent years primarily because of great customer service—flexible credit terms, customized orders (quantities, seed mix, etc.), and on-time delivery, among others. Global Agricultural Products, Inc., Simmons' parent corporation, has informed Mr. Carter that his budgeted net income for the coming year will be \$120,000. The budget was based on data for the prior year and Mr. Carter's belief that there would be no significant changes in revenues and expenses for the coming period.

After the determination of the budget, Carter received notice from Simmons' principal shipping agent that it was about to increase its rates by 10%. This carrier handles 90% of Simmons' total shipping volume. Paying the increased rate will result in failure to meet the budgeted income level, and Mr. Carter is understandably reluctant to allow that to happen. He is considering two alternatives. First, it is possible to use another carrier whose rates are 5% less than the old carrier's original rate. The old carrier, however, is a subsidiary of a major customer; shifting to a new carrier will almost certainly result in loss of that customer and sales amounting to \$70,000.

Assume that prior to the recent rate increase, the shipping costs of the principal carrier and the other carriers were the same, and that costs of the other carriers are not expected to change.

As a second alternative, Simmons can purchase its own trucks thereby reducing its shipping costs to 85% of the original rate. The new trucks would have an expected life of 10 years, no salvage value and would be depreciated on a straight line basis. Related fixed costs excluding depreciation would be \$2,000. Assume that if Simmons purchases the trucks, Simmons will replace the principal shipper and the other shippers.

Following are data from the prior year:

Sales	\$1,500,000
Variable costs (excluding shipping)	1,095,000
Shipping costs	135,000
Fixed costs	150,000

REQUIRED:

1. Using cost-volume-profit (CVP) analysis and the data provided, determine the maximum amount that Mr. Carter can pay for the trucks and still expect to attain budgeted net income.
2. At what price for the truck would Mr. Carter be indifferent between purchasing the new trucks and using a new carrier?
3. Mr. Carter has decided to use a new carrier, but now is worried its apparent lack of reliability may adversely affect sales volume. Determine the dollar amount of sales that Simmons can lose because of lack of reliability before any benefit from switching carriers is lost completely.
4. Describe what you think is the competitive strategy of Simmons Farm and Seed Company. What should be the strategy? How would the use of a new carrier affect the strategy?
5. Can Mr. Carter use value chain analysis to improve the profits of Simmons Farm and Seed Company? If so, explain how briefly.

Case 09-3: Cost-Volume-Profit (CVP) Analysis and Strategy

Melford Hospital operates a general hospital, but rents space and beds to separately-owned entities rendering specialized services such as pediatrics and psychiatric care. Melford charges each separate entity for common services such as patients' meals and laundry, and for administrative services such as billings and collections. Space and bed rentals are fixed charges for the year, based on bed capacity rented to each entity.

Melford charged the following costs to pediatrics for the year ended June 30, 2013:

	Patient Days (variable)	Bed Capacity (fixed)
Dietary	\$ 600,000	—
Janitorial	—	\$ 70,000
Laundry	300,000	—
Laboratory	450,000	—
Pharmacy	350,000	—
Repairs and maintenance.....	—	30,000
General and administrative	—	1,300,000
Rent	—	1,500,000
Billings and collections	<u>300,000</u>	<u>—</u>
Total	<u>\$2,000,000</u>	<u>\$2,900,000</u>

During the year ended June 30, 2013, pediatrics charged each patient an average of \$300 per day, had a capacity of 60 beds, and had revenue of \$6,000,000 for 365 days. In addition, pediatrics directly employed the following personnel:

	Annual Salaries
Supervising nurses	\$25,000
Nurses	20,000
Aides	9,000

Melford has the following minimum departmental personnel requirements based on total annual patients-days:

Annual Patient Days	Aides	Nurses	Supervising Nurses
Up to 21,900	20	10	4
21,900 to 26,000	26	13	4
26,001 to 29,200	30	15	4

These staffing levels represent full-time equivalents. Pediatrics always employs only the minimum number of required full-time personnel. Salaries of supervising nurses, nurses, and aides are therefore fixed within ranges of annual patient-days.

Pediatrics operated at 100% capacity on 90 days during the year ended June 30, 2013. It is estimated that during these 90 days the demand exceeded 20 patients more than capacity. Melford has an additional 20 beds available for rent for the year ending June 30, 2014. Such additional rental would increase pediatrics' fixed charges based on bed capacity.

REQUIRED:

1. What is the strategic role of CVP analysis for the pediatrics unit of Melford hospital?
2. Determine the minimum number of patient days required for pediatrics to breakeven for the year ending June 30, 2014, if the additional 20 beds are not rented. Patient demand is unknown, but you can assume that revenue per patient-day, cost per patient-day, cost per bed, and salary rates will remain the same as for the year ended June 30, 2013.
3. Assume that patient demand, revenue, revenue per patient day, cost per patient-day, cost per bed, and salary rates for the year ending June 30, 2011 remain the same as for the year ended June 30, 2013. Prepare a schedule of increase in revenue and increase in costs for the year ending June 30, 2014, in order to determine the net increase or decrease in earnings from the additional 20 beds if pediatrics rents this extra capacity from Melford.

Case 9-6: Profit Planning—Choice of Cost Structure

The owner of a package delivery business is currently evaluating the choice between two different cost structures, based on how the delivery personnel are paid. One option (hereafter, “Alternative #1”) has relatively higher short-term fixed costs, while the other option (hereafter, “Alternative #2”) has the reverse—that is, relatively higher variable costs in its cost structure. (For simplicity in this example we hold the delivery cost per package, that is, the selling price per unit is constant. Selling price is independent of the cost-structure choice.) The following table contains pertinent information for creating the CVP model for each decision alternative:

Decision Inputs (Data)	Cost Structure Alternative #1	Cost Structure Alternative #2
Delivery price (i.e., revenue) per package	\$60	\$60
Variable cost per package delivered	\$48	\$30
Contribution margin per unit	\$12	\$30
Fixed costs (per year)	\$600,000	\$3,000,000

Requirements

- (1) What is meant by the term “short-term profit-planning” model, and how can such a model be used by management? (That is, in what sense can this model be used to facilitate planning, control, or decision-making by managers of an organization?)
- (2) What are the definitions of fixed costs, variable costs, contribution margin ratio, contribution margin per unit, and relevant range?
- (3) What is the break-even point, in terms of number of deliveries per year (or per month), for Alternative #1? For Alternative #2?
- (4) How many deliveries would have to be made under Alternative #1 to generate a *pre-tax* profit, π_B , of \$25,000 per year?
- (5) How many deliveries (per month or per year) would have to be made under Alternative #1 to generate a *pre-tax* profit, π_B , equal to 15% of sales revenue?
- (6) How many deliveries would have to be made under Alternative #2 to generate an *after-tax* profit, π_A , of \$100,000 per year, assuming a tax rate of, say, 45%?
- (7) Assume that for the coming year total fixed costs are expected to increase by 10% for each of the two alternatives. What is the new break-even point, in terms of number of deliveries, for each decision alternative? By what percentage did the break-even point change for each case? How do these figures compare to the percentage increase in budgeted fixed costs?
- (8) Assume an average income-tax rate of 40%. What volume (number of deliveries) would be needed to generate an *after-tax* profit, π_A , of 5% of sales for each alternative?
- (9) Consider the original data in the problem. Construct a graph for each of the two alternatives depicting pre-tax profit, π_B , as function of volume (number of deliveries per year). Clearly label the profit equation for each alternative.
- (10) Based on the graphs prepared in (9), which decision alternative do you think is the more profitable one for this business?
- (11) Based on the original data and the graphs prepared above in (10), which decision alternative is more *risky* to the business? Explain. (Hint: Think about, and define in your answer, the notion of “operating leverage.”)
- (12) Finally, in building your profit-planning (i.e., CVP) model, the analyst makes a number of important assumptions. List the primary assumptions that underlie a conventional CVP analysis, such as the ones you conducted above.