



PAPER C1



Management Accounting Fundamentals

CVP analysis is more than a number-crunching device to obtain simple answers. **Grahame Steven** shows how it also provides a mechanism for further evaluation.

Cost/volume/profit (CVP) analysis can be used to determine how many products must be sold in order to break even or reach a target profit and also to calculate the margin of safety for a business proposal. Panel 1 contains the formulas for these calculations. Although the information it provides is extremely useful, CVP analysis can also offer a valuable insight into the business issues that underpin a venture.

Good Food for You (GFFY), which is run by a sole trader, is considering selling freshly cooked venison baguettes at Rock in a Hard Place, an annual two-day heavy metal festival held at the foot of Ben Nevis. Table 2 contains the information obtained by GFFY for the forthcoming festival.

To begin the CVP analysis we must determine the break-even point for the proposal – ie, the sales figure (in units) that will generate neither a profit nor a loss. The first step is to classify which costs are fixed and which are variable. Fixed costs are those that aren't affected by activity – ie, the number of sales. Variable costs are those that have a linear or close relationship with activity. Although most costs for simple projects can be classified readily in this way, it's not always a straightforward task.

With regard to the GFFY proposal, the costs of the festival pitch, accommodation, food and petrol are clearly fixed, because they will be incurred however many baguettes are sold. The average cost per baguette is variable, because it is directly linked to the number of units sold. Costs will increase by £1 every time a baguette is sold. The cost of the gas used for cooking is more problematical. Although the number of baguettes sold will affect gas usage, it's highly unlikely that the gas will be turned on and off each time a baguette is produced, since that would be an inefficient way to operate. So, while gas is not a fixed cost, it should be treated as such for this analysis because it's more fixed than variable in nature.

The second step is to calculate the contribution: the money made from the sale of each baguette. This is the selling price per unit minus the variable cost per unit: £3 – £1 = £2.

The fixed costs are then totalled: (£350 × 2) + £200 + £120 + £80 + £300 = £1,400. The lost rental income is included in the calculations because it is an opportunity cost – ie, it represents money that will not be earned if the van is used at Rock in a Hard Place.

The final step is to calculate the break-even point by dividing total fixed costs by contribution per unit: £1,400 ÷ £2 = 700. So GFFY has to sell 700 baguettes at the festival to break even,

1 FORMULAS FOR COST/VOLUME/PROFIT ANALYSIS

- **Contribution** = selling price per unit – variable cost per unit
- **Break-even sales (units)** = fixed costs ÷ contribution per unit
- **Profit target (units)** = (fixed costs + profit target) ÷ contribution per unit
- **Margin of safety (percentage)** = $\frac{\text{target sales} - \text{break-even sales}}{\text{break-even sales}} \times 100$

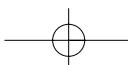
2 INFORMATION FOR GOOD FOOD FOR YOU'S PROPOSED PROJECT AT ROCK IN A HARD PLACE

- Sales price: £3 per baguette.
 - Average cost of each baguette: £1.
 - Cost of pitch: £350 per day.
 - Total accommodation and food cost for three nights: £200.
 - Cost of petrol for van: £120.
 - Cost of gas for cooking: £80.
 - Lost rental income on van: £300. (The van can be rented out to a third party if it is not used at Rock in a Hard Place.)
- NB: it's assumed that food wastage will be negligible, since the mobile kitchen has a freezer compartment and a quick-defrost facility.

but it needs to do better than that. The owner's profit target for this project is £600. The number of sales required to achieve this is calculated by adding the profit target to fixed costs and then dividing it by the contribution: (£600 + £1,400) ÷ £2 = 1,000.

The margin of safety indicates how far sales can deviate from the budget or profit target before a loss is incurred. The margin for this project is: (1,000 – 700) ÷ 1,000 = 30 per cent. Although this figure seems reassuring, it depends on the profit target, since an overoptimistic target will produce an unreliable figure.

The calculations have produced two important figures so far: the break-even point and the quantity of sales required to hit the profit target. But what are the operational implications of these figures? A key issue is the length of time the van will be





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open for business. The owner might decide, based on experience, to operate for 10 hours each day. This assumption can be used in calculating the average number of sales that must be made every hour to break even over the two days. The average hourly sales needed to achieve break-even are: $700 \div (10 \times 2) = 35$.

Although 35 sales an hour seems possible, some periods will be quiet and others will be very busy. The owner may consider it to be achievable, but what about the profit target? The average number of hourly sales required to meet the target is: $1,000 \div (10 \times 2) = 50$, which is far tougher. Although the owner could reduce the target profit to reduce the average number of sales required, a more fruitful idea could be to review the assumptions that underpin the calculations – selling price, variable costs and fixed costs – to see whether there is room for manoeuvre.

The first items to consider are fixed costs. While it's probably not possible to negotiate a lower price for the festival pitch or to reduce the van's petrol and gas consumption, the accommodation cost will be reduced by £140 if the owner stays at the camp site instead of a guest house for the three nights.

The owner may be reluctant to change the selling price, since it has been set in relation to the expected prices of competing caterers. Using lower-quality venison and bread would reduce the variable cost. The owner may choose this course of action because most potential customers at a heavy metal festival are unlikely to be gourmets. It would reduce the variable cost per unit from £1 to £0.75.

The two identified savings would reduce fixed costs by £140 to £1,260 and increase the contribution per unit by £0.25 to £2.25. All this produces a revised average hourly break-even baguette sales figure of: $(£1,260 \div £2.25) \div 20 = 28$. The number of hourly sales required to hit the profit target would be: $(£1,860 \div £2.25) \div 20 = 41.3$.

The owner would then either proceed on this basis or consider other courses of action that could make the proposal more viable. **FM**

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■ November 2005 exam dates

Tuesday November 22.
Wednesday November 23.
Thursday November 24.

■ Exam entry

Enter for the November exams online at www.cimaglobal.com/examentry from August 3.

The standard closing date for entries is September 14. If you enter after this date, you will be accepted only as a late entry and you will have to pay a late entry fee. The deadline for late entries is September 21.

■ Exam fees

You must pay your exam fees and clear any outstanding balance by September 30 in order to sit the November exams. CIMA reserves the right to withdraw your entry and apply an administration charge of £50 should payment not be received by this date. Managerial level papers cost £55 per subject, strategic level papers cost £60 per subject and TOPCIMA costs £80. The late entry fee is £160.

Please read the rules of exam entry for further information.

■ November 2005 exam results

Results will be communicated to students in the last week of January 2006.

■ Cancellations and changes

We do not accept cancellations and will not refund entry fees.

To change papers or exam centres you must e-mail cima.contact@cimaglobal.com and pay the administration fees by September 30. Changes made before September 14 will cost £25. Changes made between September 15 and 30 will cost £50.

■ Pre-seen material for the TOPCIMA case study

The pre-seen material and assessment matrix will be available to download from CIMA's website from September 12. It's your responsibility to download this material and familiarise yourself with it before the exam. A "clean" copy of the pre-seen material and assessment matrix will be given to you in the exam. You cannot take any notes into the exam hall.

■ Ask a tutor – September event

Visit CIMA's website to find out about the next event under the new qualification. Use this opportunity to obtain advice from an experienced tutor.

■ CBA deadline for the CIMA Certificate in Business Accounting

If you wish to sit managerial level exams in November you must complete all of your certificate level subjects via computer-based assessment (CBA) by September 1. Visit www.cimaglobal.com/certificateentry for full information on entering for a certificate level CBA.

■ CIMA Professional Development Certificate in Business Taxation

If you have passed intermediate level paper 6 Financial Accounting, but not paper 5 Business Taxation (under the old syllabus), you can use a pass in the computer-based assessment Introduction to Business Taxation (UK) to gain credit for managerial level paper P7, Financial Accounting and Tax Principles. Visit www.cimaglobal.com/certificateinbusinesstax for more details, the full syllabus and sample questions.

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