DOWNLOAD PDF MULTI PRODUCT BREAK EVEN ANALYSIS

Chapter 1 : Sales mix and break-even point analysis - Accounting for Management

The method of calculating break-even point of a single product company has been discussed in the break-even point analysis calendrierdelascience.com this article, I would explain the procedure of calculating break-even point of a multi product company.

In break-even analyses in which are are solving for the break-even price or number of sales, the payback period is defined ahead of time. Depending on rate of change in your market, this may be a few months or a few years. Or, if you are just starting a business, your bank may want to see evidence that you will start making a profit after 18 months, or some other period. So, the total revenue TR is just the price P multiplied by number of units sold X. However, prices typically decrease with increasing demand, so be aware that the linear CVP model is a simplification. Variable Costs Variable costs include the production, direct labor, materials, and other expenses which depend on the number of units produced and sold. Some variable costs may be percentage-based like commissions while others may be dollar-based like material costs. In the break-even calculator, you can split the cost between the percentage-based and dollar-based categories. You should be aware that this is a simplification. For example, when labor is involved in production, productivity can have a significant effect see ref [1]. Fixed Costs Fixed costs are those which are assumed to be constant during the specified payback period and which do not depend on the number of units produced. Advertising, insurance, real estate taxes, rent, accounting fees, and supplies would all be examples of fixed costs. Fixed costs also include salaries and payroll taxes for non-direct labor such as administrative assistants and managers, or in other words, the payroll not included as variable costs. In reality, increasing production may also increase the expenses that are listed as "fixed costs" because they increase as the business grows and hires new employees. After you run the break-even analysis, and especially if you use the CVP model to calculate sales required to reach a target profit, you should revisit your cost analysis to ensure that the costs match the level of production and sales required to reach your goals. Break Even Chart The spreadsheet includes a break-even chart like the one shown below, which shows the Break-Even Point BEP as the intersection between the Total Revenue and Total Cost when plotted with the number of units on the x-axis. Actually, there are many ways to define the break even point. You may also want to calculate how long it will take you to break even, which is officially called the payback period. Break-Even Units The following formula is for calculating the number of units X you will have to sell over the specified period of time. The formula for solving for the break-even price requires you to break down the variable costs into dollar-based and percentage-based costs: Payback Period For very simple sales scenarios, the CPV model can be used to solve for the Payback Period, or the number of months required to break even. Both the revenue and the costs may depend on time so we have to define a few new terms. To calculate the payback period, the number of units sold X is specified as a number of units per month. Start-Up Costs are the costs required to develop the product, or create the very first product. Recurring Fixed Costs are those which are paid monthly or annually but which are not directly tied to the number of units sold, like web-hosting fees, monthly advertising expenses, insurance premiums, etc.

Chapter 2 : Break Even Analysis Template | Formula to Calculate Break-Even Point

Break-even analysis may be performed for each type of product if fixed costs are determined separeately for each product. However, fixed costs are normally incurred for all the products hence a need to compute for the composite or multi-product break-even point.

The technique is widely used in business and has many advantages. However, there are some drawbacks as well. Understanding the pros and cons to CVP analysis can help you determine whether this technique should be implemented in your company. Ease of Calculation One the biggest advantages to CVP analysis is that calculations are incredibly simple. CVP analysis uses a standard set of formulas that work for all of the analysis techniques. Anyone who can plug numbers into the formulas is able to quickly determine the effects of hypothetical changes in these variables. This makes CVP analysis a useful technique for small-business owners who are new to business or do not have a strong accounting background. Understandability For the most part, CVP analysis is free of accounting jargon and complex terminology. This makes both the preparation and interpretation of CVP analysis figures understandable. In order to make this calculation, you will need to know how much it costs to make your product and how the cost behaves -- that is, whether the cost increases as production increases or whether it is a constant. Unlike some accounting terminology, these cost concepts are intuitive to many small-business owners. CVP analysis techniques assume that all costs in the company are completely fixed or completely variable. Fixed costs are costs that do not change with changes in production, such as rent or insurance costs. Variable costs change at a constant rate as you increase the number of units produced. Common variable costs include materials and labor costs. However, there are many costs that have a fixed and variable component, known as mixed costs. For example, you may pay a monthly charge for telephone service, but then pay a change per minute of use. The monthly charge is a fixed cost, but the per-minute charge is variable. CVP analysis does not have a way to deal with these costs unless they are split into their fixed and variable components, which can be cumbersome. Inflexibility As part of it being quick and easy to use, CVP analysis has a built-in set of assumptions that are fairly rigid. For example, CVP analysis assumes that a company sells one product, or that if it sells multiple products the proportion of how much of each product is sold remains constant. This is known as a constant sales mix assumption, and many businesses do not follow this sales pattern. For example, a restaurant probably sells more hot drinks in the winter than it does in the summer, and these drinks could have different cost assumptions. If your company has a large variety of products or if your mixture of products sold changes frequently, then CVP analysis may not work for you. He is a certified public accountant, graduated summa cum laude with a Bachelor of Arts in business administration and has been writing since His career includes public company auditing and work with the campus recruiting team for his alma mater.

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Chapter 3 : Break-Even Analysis (With Diagram)

The break even analysis for multiple products is carried out using the following steps: Step 1: Calculate the Weighted Average Contribution Margin In the single product example we used the contribution margin of the product to work out the break even units.

Overview[edit] The break-even point BEP or break-even level represents the sales amountâ€”in either unit quantity or revenue sales termsâ€”that is required to cover total costs, consisting of both fixed and variable costs to the company. Total profit at the break-even point is zero. It is only possible for a firm to pass the break-even point if the dollar value of sales is higher than the variable cost per unit. This means that the selling price of the good must be higher than what the company paid for the good or its components for them to cover the initial price they paid variable costs. Once they surpass the break-even price, the company can start making a profit. The break-even point is one of the most commonly used concepts of financial analysis, and is not only limited to economic use, but can also be used by entrepreneurs, accountants, financial planners, managers and even marketers. Break-even points can be useful to all avenues of a business, as it allows employees to identify required outputs and work towards meeting these. The break-even value is not a generic value and will vary dependent on the individual business. Some businesses may have a higher or lower break-even point, however it is important that each business develop a break-even point calculation, as this will enable them to see the number of units they need to sell to cover their variable costs. Each sale will also make a contribution to the payment of fixed costs as well. For example, a business that sells tables needs to make annual sales of tables to break-even. At present the company is selling fewer than tables and is therefore operating at a loss. As a business, they must consider increasing the number of tables they sell annually in order to make enough money to pay fixed and variable costs. If the business does not think that they can sell the required number of units, they could consider the following options: Reduce the fixed costs. This could be done through a number or negotiations, such as reductions in rent payments, or through better management of bills or other costs. Reduce the variable costs, which could be done by finding a new supplier that sells tables for less. Either option can reduce the break-even point so the business need not sell as many tables as before, and could still pay fixed costs. Purpose[edit] The main purpose of break-even analysis is to determine the minimum output that must be exceeded for a business to profit. It also is a rough indicator of the earnings impact of a marketing activity. A firm can analyze ideal output levels to be knowledgeable on the amount of sales and revenue that would meet and surpass the break-even point. The break-even point is one of the simplest, yet least-used analytical tools. Identifying a break-even point helps provide a dynamic view of the relationships between sales, costs, and profits. For example, expressing break-even sales as a percentage of actual sales can help managers understand when to expect to break even by linking the percent to when in the week or month this percent of sales might occur. The break-even point is a special case of Target Income Sales , where Target Income is 0 breaking even. This is very important for financial analysis. Any sales made past the breakeven point can be considered profit after all initial costs have been paid Break-even analysis can also provide data that can be useful to the marketing department of a business as well, as it provides financial goals that the business can pass on to marketers so they can try to increase sales. Break-even analysis can also help businesses see where they could re-structure or cut costs for optimum results. This may help the business become more effective and achieve higher returns. In many cases, if an entrepreneurial venture is seeking to get off of the ground and enter into a market it is advised that they formulate a break-even analysis to suggest to potential financial backers that the business has the potential to be viable and at what points.

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Chapter 4 : Accounting Cost-Volume-Profit Analysis: Online Accounting Tutorial & Questions | calendrierde

If a company sells multiple products, break even analysis is somewhat more complex than discussed in the topic break even point calculation. The reason is that the different products will have different selling prices, different costs, and different contribution margins.

The following illustration will help to understand the whole principal: Types of Break-Even Chart: The BECs we have discussed so far are the common type. There are certain types of Break-Even Charts which are yet to be discussed and which are used for various purposes. Some of them are discussed here under: Under this type of BEC, the total variable costs, i. In this respect it may be mentioned that if this chart contains only the details of appropriation of profit it may be called profit-appropriations BEC. The following illustration with help to understand the principle: From the following particulars, draw up a detailed BEC: Control Break-Even Chart proves itself a very useful method which directly helps the management in taking decisions. It is to be remembered that the detailed information about deviations between budgeted figures and actual figures is not possible graphically. Before preparing a Cash Break-Even Chart we are to divide the amount of fixed cost into two following groups: Similarly variable costs which need immediate payment, are plotted as usual. But care should be taken if any credit transaction is included in the variable cost. This Chart is very useful to those firms which suffer from short-term liquidity and solvency position as well. It is primarily used in cash flow analysis. From the following information prepare a Cash-Break-Even Chart: This is particularly useful where the demand for a product is elastic. Because in case of perfect competition selling price of a product is to be reduced in order to earn more profit by increasing the volume of sales which ultimately gives a highest contribution. Now, the problem arises before us is that at what stage the amount of profit will be maximised since the volume of sales are fluctuating. This can be solved with the help of a BEC which is shown below. In this regard, it may be said that if amount of sales and costs at different stages are plotted on a graph paper, it becomes possible for us to know at which point the profit will be maximized. Needless to mention that that point will be the optimum level and that selling price of the products will be the optimum selling price of the products of the firm. All these information can be had with the help of a BEC which is presented below: The fixed costs amount to Rs. Before preparing the graph the following table is prepared: Now taking the above data, we can plot the same on s graph which is depicted as under: As such, this will be the optimum level of output at the prevailing selling price which will yield the maximum profit. Method of Preparation of Break-Even Chart: Then plot the variable cost line over fixed cost level at various level of activity and join the variable cost line with fixed cost line at zero level of activity which will indicate total cost line â€" variable cost being over fixed cost line.

Chapter 5 : Construction of Multi-Product Break-Even Chart

In summary, the break-even analysis formula, used by a company selling a single product, is similar to the formula used by a company selling multiple products. A company selling multiply products, however, must calculate a weighted average selling price and a weighted average product cost (variable cost).

The below mentioned article provides a complete overview on Break-Even Analysis. The break-even point refers to the level of output at which total revenue equals total cost. Management is no doubt interested in this level of output. Therefore, the primary objective of using break-even charts as an analytical device is to study the effects of changes in output and sales on total revenue, total cost, and ultimately on total profit. The following list seeks to highlight some of the more practical applications of break-even analysis: What happens to overall profitability when a new product is introduced? What level of sales is needed to cover all costs and earn, say, Rs. Between two alternative investments, which one offers the greater margin of profit safety? What are the revenue and cost implications of changing the process of production? Graphical Presentation of Break-Even Model: The horizontal axis measures the rate of output, and revenues and costs, measured in rupees, are shown on the vertical axis. The law of diminishing returns accounts for the curvilinear shape of the total cost curve. To the left of Qa and to the right of Qb total costs exceed total revenues, and there are losses. So there are two break-even points. The generalized model in Figure Conversely, linearity in the case of the total cost curve implies that the firm can expand output without changing its variable cost per unit very much. For a relatively narrow output range, this is no doubt a reasonable assumption. These qualifications apart, there is much to -be said for using the linear break-even model in the real commercial world. At both the points there is neither profit nor loss. But in Figure If the price of the product exceeds variable cost, the firm would attempt to expand production with a view to covering fixed cost and make profit subsequently. The difference between the two i. This shows the contribution of the product toward the recovery of fixed cost and toward net profit. For example, if a product sells for Rs. Total contribution margin or profit TCM is expressed as: Contribution as a Decision Criterion: The difference between the revenue produced from sale of a product, and its production and selling cost, is the contribution towards fixed costs and to the ultimate net profit. This contribution concept is often used for decision-making purposes. There is hardly any reason, however, why every product-line made and marketed by the firm should be expected to make the same contribution. By contrast, there is a case for assuming that preference should be given to those product-lines which offer the possibility of making the largest contribution. Initially, it approaches the problem by way of full cost and produces some such statement as the following: It may apparently seem, from this example, that both products yield the same percentage profit on sales and that there is nothing to choose between them. Now we get a completely different picture. The relationship is illustrated in Figure In order to adopt this type of approach, one must relate the costs directly to the production and marketing of the productâ€”the costs which could be avoided by not producing the item. In a multi-product firm, it is not enough merely to determine the product mix with a view to the maximization of contribution. As a guide to the solution of this problem it may appear necessary to evolve some yardstick to enable a decision to be made as to which product-line or order is to be discarded, when particular production facilities are overburdened. Consider the following example: The order B contributes Rs. But its claim on production facilities if 25 times as great. The result is that the contribution per facility hour is Rs. Thus, if the volume of production which the firm can sell exceeds the existing capacity, the optimal results will be obtained by producing those orders which make the maximum contribution per facility hour in the area where the bottleneck occurs. A company produces two products X and Y. The following facts are given regarding them: Since the production hour is the limiting factor, product X, which makes greater contribution per hour, will be accorded priority. Therefore, optimum product mix will be as under: The remaining hours will be utilised for the production of Y, i. We know that average net profit, i. Algebra of Break-Even Analysis: We may now define the symbols usually used in break-even analysis: The breakeven point may now be computed in one of three different but interrelated ways: To illustrate, assume that we have a factory that can produce a maximum of 20, units of output per month. These 20, units can be

sold at a price of Rs. Variable costs are Rs. By a direct application of Eq.

Chapter 6 : Chapter 8 - Multiple Product Cost-Volume-Profit Analysis

Breakeven analysis and cost-volume-profit analysis will help you understand whenâ€"and ifâ€"your business will start to recover those costs and begin making a profit. Understanding your breakeven point will help you to determine how much you need in revenue to keep your business going.

Chapter 7 : Advantages & Disadvantages of Cost Volume Profit Analysis | Your Business

Cost-volume-profit (CVP) analysis is a helpful tool regardless of the number of products a company sells. CVP analysis is more complex with multiple products. Two complications are encountered when multiple products are sold by companies.

Chapter 8 : Break Even Analysis With Multiple Products - Sales Mix - calendrierdelascience.com

In a CVP analysis of a company that sells single or multiple products, a break-even point and a target profit point are found for the single product, or for the multiple products given the sales mix ratio among the products.

Chapter 9 : Multi-Product Break-Even Analysis - AccountingVerse

This video shows an example problem computing multiple product breakeven point using weighted average. For more help with accounting, please visit my website.