

## Enterprise Budgets Take-Home Reading

In Lesson 4 we talked about the Income Statement. The income Statement looks at the entire business. It includes the revenues from the sale of all products and services. It includes the expenses associated with everything the business does. The Income Statement is very important in analyzing the profitability of the entire business. But for businesses that sell several products or provide several services, it is hard to determine the profitability of these individual products/services from an Income Statement. Greta sells a variety of products – corn, tomatoes, beans, lettuce, baskets, bread, etc. It is difficult to see whether she is making money or losing money by selling corn, or tomatoes, etc. How does she know which products are making money for her and which products are losing money?

We use an Enterprise Budget to calculate the profits that we earn from each individual product/service. We refer to each product or service as an “enterprise” – one distinct aspect of the entire business. Greta has a corn enterprise, a tomato enterprise, a basket enterprise, and so on. A dairy farm that just sells milk also has several enterprises – the cow enterprise, the corn silage enterprise, the hay enterprise, the soybean enterprise, etc. An Enterprise Budget just looks at the revenues and expenses of one enterprise. This allows the manager to determine whether that enterprise is profitable or not. Greta can use enterprise budgets to determine whether she needs to raise her price on her corn, or whether she should stop selling bread because it is not profitable. Enterprise budgets allow the manager to examine each part of the business. You can think of an Enterprise Budget as an Income Statement for just one specific part of the business.

An Enterprise Budget has three main sections: the revenue section, the operating expense section, and the overhead expense section. It shows the profitability of the enterprise (revenues minus expenses). And it allows the manager to look at how sensitive that enterprise is to changes in the prices of the product, the expenses of the inputs, and the quantity of product that is sold each year – we call this Sensitivity Analysis.

The Revenue Section is the same as on an Income Statement, except that it only lists the revenues for that specific enterprise. Greta’s sweet corn budget will only list the revenues from the sale of sweet corn; it will not include revenues from the sale of tomatoes or beans or baskets. We list the quantity of product or service sold each year along with the selling price of that product/service. Total Revenue is simply the quantity sold times the selling price per unit:

$$\text{Total Revenue} = \text{Quantity Sold} \times \text{Selling Price/Unit}$$

If Greta thinks she will sell 500 dozen ears of corn this year at a price of \$5/dozen, her total revenues will be:

$$\text{Total Corn Revenue} = 500 \text{ dozen} \times \$5/\text{dozen} = \$2,500$$

If Greta were to sell her corn in two different methods – say, by the dozen and by the ear – she should list both of these methods in the revenue section. Assume that she plans to sell 450 dozen at \$5/dozen and 600 individual ears at \$0.50/ear. Her total revenue for the corn enterprise is:

## Revenues

$$450 \text{ dozen} \times \$5/\text{dozen} = \$2,250$$

$$600 \text{ ears} \times \$0.50/\text{ear} = \$300$$

$$\text{Total Revenue} = \$2,250 + \$300 = \$2,550$$

The Operating Expense Section lists all of the operating expenses that are specifically related to that enterprise. Greta's operating expenses for the corn enterprise include the purchase cost of the corn (the cost of goods sold), packaging costs for the corn (bags, plastic wrap, etc.), and so on. We typically list the specific operating input, the amount of that input used by the enterprise, and the cost per unit of that input. The last entry in this section is called "Interest on Operating Expenses". This represents the cost of the money that Greta uses to pay the operating expenses for the corn enterprise. The easiest way to think about interest on operating expenses is to assume that Greta uses an operating loan to pay for all of her operating expenses. The interest on this loan is an operating expense. We calculate interest on operating expenses by multiplying the subtotal of operating expenses by the interest rate on the loan; we then multiply this by the portion of the year that the money is used in this enterprise. Here's an example:

Greta's subtotal of operating expenses is \$1,430

(\$1,250 to purchase the corn + \$30 for packaging + \$150 for corn advertising)

The annual interest rate (called APR) on the loan is 5%

Greta only has these expenses for 4 months out of the year – so she only pays interest for 4/12 of the year (4 months out of 12 months in the year)

$$\text{Interest on Operating Expenses} = \$1,430 \times 5\% \times 4/12 = \$23.83$$

Greta’s operating expense section of her corn enterprise budget might look like this:

Operating Expenses			
Purchased Corn	500 dozen	\$2.50/dozen	\$1,250
Packaging	600 bags	\$0.05/bag	\$30
Advertising – Corn Only	3 ads	\$50/ad	\$150
<u>Interest on Operating Expenses</u>	<u>5%</u>	<u>4 months</u>	<u>\$1,430</u>
Total Operating Expenses			\$1,453.83

We can now determine how much profit Greta can expect to earn after she pays all of her operating expenses. We call this Return Above Operating Costs or Return Above Variable Costs. Another term for this is Gross Margin – don’t you just love how the business world uses different terms for the same things? I know that it is frustrating to learn several terms that mean the same thing – hang in there, you’ll get it! Return Above Operating Costs is calculated by subtracting the total operating expenses from the total revenues for the enterprise:

$$\text{Return Above Operating Costs} = \text{Total Revenues} - \text{Total Operating Expenses}$$

Return Above Operating Costs (RAOC) measures how much of your revenues are remaining after you pay all of your operating expenses. You always want the RAOC to be greater than zero. If RAOC is less than zero that means that you are losing money on every unit that you sell. If you sell more units, you will lose even more money. This means that you either have to increase your selling price (and hope that you don’t chase away too many customers) or decrease your operating expenses, or both. If you cannot make changes so that your RAOC is greater than zero you should get completely out of that enterprise.

The final section of the Enterprise Budget is the Overhead (or Fixed) Expense section. Remember that overhead expenses do not change with the level of sales. The main overhead expenses are depreciation, interest on the money invested in non-current assets, insurance, and property taxes. Other overhead costs include rent, labor, utilities, and advertising for the entire business (not just for one enterprise). Some people will say that labor is an operating expense if you pay people by the hour; however, think about this – Greta hires Billy for \$10/hour, but no customers come in during the middle of the day. There were no sales, but Greta still has to pay Billy – that is why I classify it as an overhead expense.

Depreciation is an estimate of how much value your non-current assets lose each year. You don’t actually pay this amount to anyone – it is simply a loss to the business. Think of depreciation as a block of ice – as time passes that block of ice melts and gets smaller. The same thing happens to your buildings and equipment – their value gets smaller each year because it’s wearing out, it’s getting older, and there are newer, more efficient models coming out every year. On an Enterprise Budget we only list the portion of the depreciation that is related to that enterprise. For example, if Greta only uses her 30% of her refrigerators for her corn enterprise, she only lists 30% of the annual depreciation of the refrigerators on her corn Enterprise Budget. If she doesn’t use her freezers at all in the corn enterprise, she should not list any depreciation on the freezers on her corn budget.

Interest on the money invested in non-current assets is the cost of using that money to buy an asset. If Greta spends \$10,000 to buy a new freezer, she has \$10,000 “locked up” in that freezer – she can’t use that money for other purposes. Maybe the easiest way to think about this interest cost is to assume that she borrowed the entire amount to purchase the freezer, and she owes interest on that loan. Either way, there is a cost to having money invested in non-current assets. Just as with depreciation, we only list the portion of the interest that is related to that enterprise. So Greta would only list 30% of the interest cost of her refrigerators and 0% for the freezers on her corn budget.

The annual cost of the insurance and property taxes on the non-current assets should also be listed in proportion to their use in the enterprise. Rather than having to calculate the depreciation, interest, insurance and property taxes for each non-current asset we can use a shortcut. We can estimate the total overhead costs on these non-current assets by multiplying the purchase price of the asset by a percentage. Here’s a list of percentages that you can use:

- For machinery and equipment – use 20-25% of the purchase price
- For buildings and facilities – use 5-15% of the purchase price
- For breeding livestock – use 10-15% of the purchase price (or value)
- For land – use 5-10% of the purchase price
- Note, we do not calculate depreciation on land

You include these overhead expenses on non-current assets, as well as other overhead costs – advertising, labor, etc. – in proportion to its use in that enterprise. You can also include an estimate of how much Greta wants to “pay herself” for managing this enterprise – this is called a profit objective. However, most enterprise budgets do not include a “salary” or profit objective for the owner – they assume that the owner will receive the overall profit from the enterprise. Let’s look at Greta’s overhead costs for the corn enterprise. We can start with the value of the non-current assets on Greta’s balance sheet and use the percentages as shown:

Total machinery & equipment used in the corn enterprise = \$40,000  
Total machinery overhead = \$40,000 x 20% = \$8,000/year  
Percentage associated with the corn enterprise = 5%  
Total machinery overhead in corn enterprise = \$8,000 x 5% = \$400

Total Building, Land, & other non-current asset used in corn enterprise = \$355,000  
Total Building, Land & other overhead = \$355,000 x 5% = \$17,750/year  
Percentage associated with the corn enterprise = 2%  
Total Building, Land & other overhead in corn enterprise = \$17,750 x 2% = \$355

Once you have all of the overhead expenses listed for the enterprise, calculate the Total Overhead Expenses. Simply add them together. Then, calculate the Total Expenses:

Total Expenses = Total Operating Expenses + Total Overhead Expenses

Now we're ready to look at the profitability of the corn enterprise after all expenses (operating and overhead) are paid. We call this Return Above Total Costs (RATC). This is similar to the Net Income from the Income Statement. It represents how much profit you will earn from this enterprise this year.

You want your Return Above Total Cost to be greater than zero, and higher is better – that means more profits! But unlike Return Above Operating Costs, it is okay for the RATC to be less than zero occasionally. We don't like to see it less than zero for long, so the manager needs to make changes to the enterprise to try to raise it above zero. Here's a simple example of why it's okay for RATC to be less than zero one year (but not every year). Assume the following information is from your enterprise budget for baskets:

Total Revenues = \$1,000	
Total Operating Expenses = \$600	
Return Above Operating Costs = \$500	(\$1,000 – \$600)
Total Overhead Expenses = \$500	
Total Expenses = \$1,100	(\$600 + \$500)
Return Above Total Cost = negative \$100	(\$1,000 - \$1,100)

Your Return Above Operating Costs is greater than zero – that's a good sign! But your Return Above Total Costs is negative \$100. That means that you will lose \$100 after all expenses are paid. You cannot operate the business in this manner every year – you will run out of money eventually. But we need to look at whether you should operate this enterprise for the upcoming year. If you do operate, you will lose \$100 after all expenses are paid. If you decide not to operate this enterprise you will not have any revenues or operating expenses, but you will still have your overhead expenses of \$500. So your Return Above Total Costs will be negative \$500 if you do not operate. Maybe this will help you see what's going on:

	Do Not Operate	Operate
Total Revenues	\$1,000	\$0
Total Operating Expenses	\$600	\$0
Total Overhead Expenses	\$500	\$500
Total Expenses	\$1,100	\$500
Return Above Total Costs	negative \$100	negative \$500

Here are a few rules of thumb for deciding whether to continue to operate an enterprise or to shut it down:

1. Shut it down if the Return Above Operating Costs is less than zero (RAOC < \$0)
2. If the Return Above Operating Costs is greater than zero, go ahead and operate this year.
3. If the Return Above Total Costs is less than zero, you can keep operating as long as the Return Above Operating Costs is greater than zero – but you will have to make changes to improve the profitability to operate year after year.
4. If the Return Above Total Costs is greater than zero – GREAT! Stay in business!

Let's look at Greta's sweet corn enterprise budget for the upcoming year:

Sweet Corn  
For the Year 2023

Revenues			
Sold by the dozen	450 dozen	\$5/dozen	\$2,250
Sold by the ear	600 ears	\$0.50/ear	\$300
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Total Revenue			\$2,550
Operating Expenses			
Purchased Corn	500 dozen	\$2.50/dozen	\$1,250
Packaging	600 bags	\$0.05/bag	\$30
Advertising – Corn Only	3 ads	\$50/ad	\$150
Interest on Operating Expenses	5%    4 months	\$1,430	\$23.83
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Total Operating Expenses			\$1,453.83
Return Above Operating Costs			\$1,096.17
Overhead Expenses			
Machinery & Equipment			\$400
Buildings & Land			\$355
Utilities			\$200
Labor			\$150
Insurance			\$50
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	Total Overhead Expenses		
\$1,155			
Total Expenses			\$2,608.83
Return Above Total Costs			negative \$58.83

What do you think about this sweet corn budget? Should Greta continue to sell sweet corn or should she concentrate on other products that are more profitable?

The first step is to look at her Return Above Operating Costs to see if it is greater than zero. In this case, it is a positive \$1,096.17 -- that means that Greta should continue to sell sweet corn this year.

Next, we look at the Return Above Total Costs to see if it is positive. Greta's Return Above Total Cost is negative \$58.83. That means Greta will not have enough revenues to pay for all of her expenses – she will be \$58.83 short of paying all of her expenses. And remember, she isn't paying herself anything for managing this enterprise. Many people would say that she should get out of business based on these factors. But from a financial standpoint she should stay in business this year and try to make changes to improve the profitability of her sweet corn enterprise. Why, you say? If she continues to sell corn she will lose \$58.83. If she does not

sell corn this year, she will not have any revenues or operating costs, but she will still have the overhead costs for the business. Whether or not she sells corn, she will still have the building and facilities and the equipment; she just won't be using them to sell corn. And those assets will be depreciating and have property taxes, whether or not she sells corn. If she does not sell corn she will lose \$1,155 this year. Which would you rather do – lose \$58.83 or lose \$1,155? Personally, I'd rather lose just the \$58.83!

Now Greta has to decide whether she wants to continue selling corn in the future. If she does, she has to figure out some ways to make the corn enterprise more profitable. What would you do if you were in Greta's position? Here are some possible actions that she can take to make the corn enterprise more profitable:

- She can increase her selling price. What would happen if she increased her selling price to \$5.50/dozen? If nothing else changes, her Return Above Total Costs would increase to a positive \$141.17 for the year. But, what might happen if she increases her price? Some of her customers might decide to buy their corn somewhere else, and Greta's corn revenues might actually decrease.
- She can try to reduce her five largest expenses. In this case, it would be:
  - Cost of the Purchased Corn (Cost of Goods Sold) (\$1,250)
    - She can try to find lower priced corn from other farmers. But lower price might mean that the quality of the corn is lower as well – and that's not good for sales! Or she can offer to pay the farmers less for their corn – and they may not sell to her, so she won't have any corn to sell at all.
  - Overhead costs of her Machinery & Equipment (\$400)
    - She can try to lower her overhead costs by getting rid of machinery that she doesn't need, or by purchasing used equipment instead of new equipment when it's time to replace them.
  - Overhead costs of her Buildings & Land (\$355)
    - Well, there's not much she can do to reduce these costs, other than to sell some of her land.
  - Utilities (\$200)
    - She can use energy-efficient appliances (like motion-sensing light switches), or maybe she can run her refrigerators at a slightly higher temperature to save electricity. She can also train her employees to be sure to close the doors completely. Or maybe she can put some of the corn on a display stand so that customers do not have to open the refrigerators to get their corn....
  - Labor or Advertising (\$150)
    - Greta can try to schedule her labor more efficiently so that her workers aren't standing around with nothing to do at certain times of the day. Or Greta can do more work herself and hire less labor.
    - Advertising is a confusing situation, just like charging a higher price – it's hard to determine what will happen if she reduces her advertising expenses. If she advertises less, she can save money, but what will happen to the amount of corn she sells? Or, what happens if she increases the advertising for her corn? It will cost her more, but she may sell a lot more corn because of the increased advertising. This is more proof that there isn't one correct way to do things in business – it is not an exact science!

A manager should have enterprise budgets for each enterprise in the business. This allows the manager to see more clearly where the business is making money and where it may be losing money. Budgets provide the information that is necessary to make sound financial decisions. And they're a great use of spreadsheets, too!