



Application Manual for:

‘Sensitivity Analyzer’

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1 Purpose of Application

1.1 Play the Numbers

Establishing the Annual Operating Plan, Business Plan or Budget is normally a cumbersome process, the efforts required to establish it barely leaves time for developing alternatives. With the Sensitivity Analyzer, you can very easily play with the numbers and develop alternative Scenarios before you decide which case you want to base your Annual Operating Plan on.

1.2 Know your 'Annual Operating Plan' (AOP)

For a successful manager it is essential to know the current 'Annual Operating Plan'. 'Knowing' not in the sense of being able to repeat its numbers out of your head, but rather to have the feeling for the items critical for success.

Every 'Annual Operating Plan' (AOP) has items where very small deviations of only a few percent decide over success or failure. Other items can be off by tens of percentage points without having a real impact on the bottom line.

The 'Sensitivity Analyzer' allows you to load your 'Annual Operating Plan' (AOP) and determine the sensitive items. These items are the ones you want to monitor carefully during the year so you can react early if they start moving in the wrong direction. On the other hand you don't waste your energies on AOP items that barely influence the outcome of the year.

1.3 Explore Alternatives

When creating a new AOP, the 'Sensitivity Analyzer' allows to easily establish alternative scenarios; be it to move your sales effort from one product to another (because it is more profitable) or increasing some costs to save money somewhere else.

1.4 Find the 'Points of no Return'

It is always good business practice to know, ahead of time, at what point you will start losing money. Explore these 'Points of no Return' with the 'Sensitivity Analyzer' and determine the probability of them to happen.

1.5 A Word of Caution

The 'Sensitivity Analyzer' uses approximations and averages to calculate the different Scenarios. The resulting numbers might therefore slightly differ from the ones obtained with a detailed calculation. Even by loading your actual numbers you can not expect the result to precisely match the actual number.

The 'Sensitivity Analyzer' allows you to quickly calculate different scenarios. It is up to you, the user to determine if the underlying assumptions are realistic. Always keep in mind that reality doesn't care what you put in your plans.

Owl Database Applications, its organs and employees can therefore not be held liable for decisions made based on results of the 'Sensitivity Analyzer"

2 The Three Parts of the Application

2.1 Product Mix

Most companies deal with a wide spectrum of products. The mix of these products can have a considerable influence on a year's numbers. The Product Mix feature allows you to easily include changes in product mix in your Scenarios. The use of the Product Mix feature is not mandatory.

2.2 Scenario

Based on your numbers, the Scenario form calculates your Annual Operating Income. This form is the heart of the application.

2.3 Sensitivity Analysis

Slightly change the numbers of a Scenario and see what influence these changes have on the 'Bottom Line'

3 Getting Ready

3.1 Using the Product Mix Feature or Not?

If you want to use the Product Mix feature of the 'Sensitivity Analyzer' or not depends primarily on the product spectrum your business handles:

- If you deal with a spectrum that has big differences in price, costs or target markets (~ >1:2) it might be helpful later on to go through the extra effort
- On the other hand, if your products are similar regarding price, costs and target markets, the additional effort to populate the Product Mix with numbers might outweigh the benefits
- Using the Product Mix feature also depends on the available data, if they are detailed enough to populate the fields for the different products. It doesn't make much sense to base the product mix on (gu)estimates.

Even if you decide now not to use the Product Mix feature, you can always create Scenarios based on a Product Mix at a later time and vice versa

3.2 Where to Start

In planning it is always a good idea to use the immediate past as a springboard to forecast the near future. It is therefore advisable to start with the last business year you have actual numbers for. As an alternative, you could use the year to date figures of the current business year and extrapolate for the whole year.

4 Populating the Product Mix

Product Mix

Find Mix Name:

Mix Name: Exported: ☒

Buttons:

Keep Constant:

Product Name	Units Sold	per unit Values							Total Per Product	
		List Price	Concession	Commission	Shipping	Pass Through	Material	Direct Hours	Sales	Hours
Prod 1 Widget A	203	30.00	0.00%	2.00%	0.00	0.00	3.00	0.6	6,090	122
Prod 2 Widget B	298	20.00	0.00%	2.00%	0.00	0.00	2.00	0.4	5,960	119
Prod 3 Widget C	3,647	100.00	0.00%	2.00%	0.00	0.00	10.00	3.0	364,700	10,941
Prod 4 Widget D	1,834	200.00	0.00%	2.00%	0.00	0.00	20.00	6.0	366,800	11,004
Prod 5	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Prod 6	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Prod 7	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Prod 8	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Prod 9	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Prod 10	0	0.00	0.00%	0.00%	0.00	0.00	0.00	0.0	0	0
Total Product Mix	5,982	124.30	0.00%	2.00%	0.00	0.00	12.43	3.7	743,550	22,186

Record: 1 of 4

4.1 Defining the Products

The 'Sensitivity Analyzer' accommodates up to 10 products or product groups. Before collecting the data define the different Products / Product Groups taking the following criteria into consideration:

- Technical similarities
- Similar price and cost structure
- Market specific products
- Number of units sold

Once you have the products / product groups defined, you can start collecting data and populate the different fields.

4.2 The Different Fields

4.2.1 Mix Name

Enter a Mix Name. When looking for an existing mix, the Mix Names appear sorted in ascending order. It might therefore be a good idea to start the Mix Name with the year (e.g. 2006 Actual, 2007 Plan, etc.)

4.2.2 Product Name

Give each Product / Product Group a distinct name so you can differentiate them later on

4.2.3 Units Sold

This is straight forward the number of units sold per product / product group

4.2.4 List Price

Especially if you are working with product groups, it is recommendable to use the List Price in this field and not the actual Sale Price. This allows you to track price increases / decreases as well as mix changes within a specific product group from year to year

4.2.5 Concession

If your Sale Price is not the same as your List Price enter the difference here as a percentage of the List Price. A positive percentage means that the Sale Price is lower than the List Price.

4.2.6 Commission

This field contains the Commission(s) in percent of the List Price. In case your business bases the Commission on the Sale Price you have to convert it.

4.2.7 Shipping

Only enter the average Shipping Costs per unit here if the costs of Shipping and Delivery are included in your List Price. Otherwise leave at 0.00

4.2.8 Pass Through

This column contains the Pass Through Costs included in your List Price. Pass Throughs are items you purchase and pass on to the customer without mark-up (and therefore not part of 'Value Added').

4.2.9 Material

Enter the average Material Costs per unit and Product / Product Group into these fields

4.2.10 Direct Hours

If your business tracks labor hours that are charged to a product (e.g. manufacturing, etc.), enter them here (in hours per Unit and Product / Product Group); if not, leave at 0.0.

4.2.11 Recalculation

Every time a new value is entered into one of above fields, the whole form is automatically recalculated. Note:

- The fields in the 'Total Product Mix' row and the 'Total per Product' columns can NOT be edited. The 'Total Sales' is 'List Price' times 'Units Sold' regardless of a 'Concession'

4.3 Additional Features

4.3.1 Find Mix Name

After selecting a mix from the drop down box, the form focuses on the selected mix.

4.3.2 Keep Constant

When developing alternate Scenarios for a year, you might want to keep the total Hours or Sales (again, 'List Price' times 'Units Sold') constant. Click on the appropriate button and a field for entering the respective value will appear. As long as the Total Sales / Total Hours value is within $\pm 5\%$ of the Value entered, the field will be solid green, if the total is below the 'Constant' value, it will blink orange, if above, red.

4.3.3 Transfer Mix to Existing Scenario

Click on this button to export the Product Mix to a Scenario you have already set up. A new form will pop up where you have to select the Scenario you want the Product Mix to export to. Click Transfer and the values of the 'Total Product Mix' row will be transferred to the selected Scenario.

Note:

- If the Scenario you export to already contains data from another Product Mix, they will be overwritten.
- Once a Product Mix is used in a Scenario, the Product Mix can neither be edited nor deleted (for data integrity reasons). It can still be exported to other Scenarios though.

4.3.4 Transfer Mix to New Scenario

Click on this button to export the Product Mix to a new Scenario. A new form will pop up where you have to enter the name for the Scenario you want to create. Click Transfer and the values of the 'Total Product Mix' row will be transferred to the new Scenario.

Note:

- Once a Product Mix is used in a Scenario, the Product Mix can neither be edited nor deleted (for data integrity reasons). It can still be exported to other Scenarios though.

4.3.5 Import Existing Mix

Click on this button to import an existing Product Mix to this Product Mix. A new form will pop up where you have to select the name of the Product Mix you want to import. Click Transfer and all the values will be transferred

4.3.6 Delete This Mix

If you don't need a Product Mix any longer, you can delete it by simply clicking on this button.

Note:

- The 'Delete' button is not available as long as the Product Mix is used in one of the Scenarios.

4.3.7 Exported

If a Product Mix is used in a Scenario, this box is checked off. At the same time, the top part of the form changes its color to green.

Remember that a Product Mix that is included in a Scenario can not be modified or deleted. If you have to change the Product Mix used in a Scenario, create a new Product Mix and export it to the Scenario in question. Once overwritten in the Scenario, you can delete the Product Mix.

5 Scenarios

5.1 General

The Scenario form has green and white fields. The green fields are the ones that accept / require input, the white ones are calculated based on the input and can not be edited.

If the legend of a field starts with '*', its values are imported from an underlying Product Mix. In a Scenario that is based on a Product Mix (the '* Description of Unit' field starts with 'Product Mix:') '*' marked field can not be edited.

5.2 The Different Fields and Buttons

Sensitivity Analyzer V 1.0 - [frmScenarios : Form]

Find Scenario:

Scenario Description:

* Number of Units Sold: * Description of Unit:

* List Sale Price:

Gross Sales

* Concessions:

* Commission:

* Delivery, Shipping:

* Pass Through Cost:

Other:

Sales Adjusted in % Gross Sales:

* Material: in % Sales Adjusted:

* Labor Hours per Unit: in % Sales Adjusted:

Hour Rate (Variable Cost): in % Sales Adjusted:

Variable Labor Cost:

Variable Labor Overhead:

Fixed Labor Overhead:

Other Cost Of Sales (Variable):

Other Cost Of Sales (Fixed):

Total Cost Of Sales:

Gross Margin in % Sales Adjusted:

Sales & Marketing:

Engineering:

Administration:

Other:

Total Operating Expenses:

Operating Income

Variable Costs

Product Name	Var. Cost	% List
Widget A	17.40	58.0%
Widget B	11.60	58.0%
Widget C	81.00	81.0%
Widget D	162.00	81.0%
	0.00	0.0%
	0.00	0.0%
	0.00	0.0%
	0.00	0.0%
	0.00	0.0%
Average	100.22	80.6%

Record: of 5

5.2.1 Find Scenario

Used to select the Scenario to be displayed. In the drop-down list the scenarios appear in ascending order of the scenario description.

5.2.2 Scenario Description

When naming a new Scenario it might be good practice to start the description with the year the Scenario applies to (e.g. 2006 Actual, 2007 Base Scenario, etc). That way all Scenarios for a specific year appear grouped together when using the Find Scenario drop down box.

5.2.3 * Number of Units Sold

This field is self-explanatory; it needs input only if the Scenario will not be based on an imported Product Mix.

5.2.4 * Description of Unit

This field is self-explanatory; it needs input only if the Scenario will not be based on an imported Product Mix.

5.2.5 * List Sale Price

It is recommendable to use the List Price in this field and not the actual Sale Price. This allows you to track price increases / decreases from year to year. If the information is available, enter the difference between List Price and actual sales price as Concession. This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.6 * Concessions

If your Sale Price is not the same as your List Price enter the difference here as a percentage of the List Price. A positive percentage means that the Sale Price is lower than the List Price. The field in the 'Total' column will display the total amount of Concessions. This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.7 * Commission

This field contains the Commission(s) in percent of the List Price. In case your business bases the Commission on the Sale Price you have to convert it. This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.8 * Delivery, Shipping

Only enter the average Shipping Costs per unit here if the costs of Shipping and Delivery are included in your List Price. Otherwise leave at 0.00. This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.9 * Pass Trough Costs

This column contains the Pass Through Costs included in your List Price. Pass Throughs are items you purchase and pass on to the customer without mark-up (and therefore not part of 'Value Added'). This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.10 Other

If you have fixed pass through costs that are not part of your value added, enter them here as a lump sum for the year.

5.2.11 * Material

Enter the average Material Costs per unit into this field. It needs input only if the Scenario will not be based on an imported Product Mix.

5.2.12 * Labor Hours per Unit

If your business tracks labor hours that are charged to a product (e.g. manufacturing, etc.), enter them here (in hours per Unit); if not, leave at 0.0. This field needs input only if the Scenario will not be based on an imported Product Mix.

5.2.13 Hour Rate (Variable Costs)

Enter your straight average hourly rate (for the 'Labor Hours') in this field.

5.2.14 Variable Labor Overhead

For every \$ you pay to your hourly employees, there is a certain amount of variable overhead directly related to the paid-out wages (holidays, housekeeping, benefits, etc). Enter it as a percentage of the average hourly rate.

5.2.15 Fixed Labor Overhead

This field is for overhead costs that do not change with paid out wages (of course within certain limits), e.g. supervisor salaries, energy cost, deferred square footage costs, etc. Enter them here as a lump sum for the whole year.

5.2.16 Other Cost of Sales

If you incur cost of sales that are not covered with above fields enter them here, either on a per unit base and/or as a fixed amount for the whole year.

5.2.17 Sales and Marketing, Engineering and Administration

Enter the costs for these activities here.

5.2.18 Other

Enter all other Operating Expenses not covered with one of the other 3 fields here as a fixed amount per year.

5.2.19 Import Numbers from another Scenario

By clicking on this button, you can create a copy of another Scenario. If the Scenario is already based on a Product Mix, the '*' ...' fields are not overwritten.

5.2.20 Variable Costs

If the Scenario is based on a Product Mix, the form displays the Variable Costs and the Variable Costs as a Percentage of the List Sale Price for each Product / Product Group

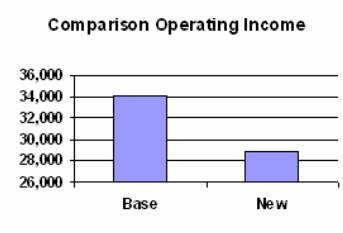
6 Analyze a Scenario

Sensitivity Analyzer

Find Scenario 2006 Actual

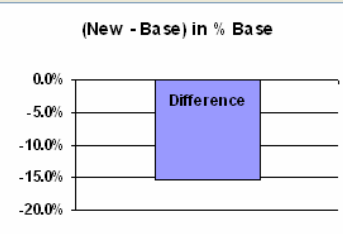
Reset Changes
Print This Analysis

Scenario Description	2006 Actual	Changes	2006 Actual
Sold Units	5,982	0.0%	5,982
Sale Price	124.30	0.0%	124.30
Gross Sales	743,550		743,550
Concessions	0	0.0%	0
Commissions	14,871	0.0%	14,871
Shipping	0	0.0%	0
Pass Throughs	0	0.0%	0
Other	0	0.0%	0
Sales Adjusted	728,679		728,679
Material	74,355	7.0%	79,560
Labor Hours per Unit	3.71	0.0%	3.71
Hour Rate (Variable Costs)	20.00	0.0%	20.00
Variable Labor Cost	443,720		443,720
Variable Labor Overhead	66,558	0.0%	66,558
Fixed Labor Overhead	20,000	0.0%	20,000
Other Cost Of Sales (Variable)	0	0.0%	0
Other Cost Of Sales (Fixed)	0	0.0%	0
Gross Margin	124,046		118,841
Sales & Marketing	30,000	0.0%	30,000
Engineering	30,000	0.0%	30,000
Administration	30,000	0.0%	30,000
Other	0	0.0%	0
Operating Income	34,046		28,841



Comparison Operating Income

Scenario	Operating Income
Base	34,046
New	28,841



(New - Base) in % Base

Metric	Value
Difference	-15.3%

This part of the application allows you to make a Sensitivity Analysis of each Scenario loaded without changing the original values.

Select the Scenario to be analyzed with the Find Scenario drop down box. The original values are displayed on the left hand side of the form.

With the up/down buttons in the middle of the form you can enter the percentage by which you want to change the original value in 1.0 % steps. You can change any number of values. The changed numbers are recalculated with each click and displayed on the middle right hand side of the form.

The top graph on the far right hand side of the form compares the original Operating Income and the new Operating income in absolute values, the bottom graph shows the difference between the two in % of the original Scenario.

If you want to keep an Analysis, just click the 'Print this Analysis' button. The created report is basically a copy of the form.

When closing the form or when moving to another Scenario, the last Change values are saved and again available when returning to this Scenario.

To reset all the changes just click the 'Reset Changes' button

7 Compare Scenarios

The application comes with the possibility to compare up to four Scenarios in a single report. The first page shows the detailed numbers for the four, followed by a graph on the second page, comparing the Operating Incomes of each of the selected Scenarios.