

# Modeling Sales Correlations When Evaluating Returns on Investment

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Very often, an investment in a product, channel, or program affects the sales and profits a firm receives from other products, channels, or programs. This effect can be a positive or negative sales correlation. To use a positive correlation example, a new option (say, an add-on software application) for a base product (say, core software application) may indirectly increase sales of the base product. Examples of negative correlations are: 1) introducing a slightly modified product (Son of Widget) which cannibalizes or replaces sales of an existing product (Widget); or, 2) adding a product within a product line which will draw some customers from existing products. Proper return-on-investment analysis requires modeling any such sales correlations.

## Basic Financial Model

The basic financial model should reflect the total impact of the investment on the firm as compared to the next best alternative (which may or may not be the status quo). This should generate a cash flow projection based on an income statement and at least the main balance sheet effects (usually working capital and direct investment). The modeling effort should focus on minimizing the most significant uncertainties (usually revenue projections). When there are sales correlations, it may be possible to model the direct financial impact (e.g. direct add-on software application financials) and add the estimated indirect impact (e.g. added core software application sales). Other times, it is clearer to model multiple scenarios and either add or subtract them to determine the incremental impact. This will be discussed in examples below.

## Positive Correlations

To model an investment in a product option, a supplier may build a stand-alone financial model for the option and add the financial impact from incremental sales of the base product. Often, the stand-alone return is negative, but the return is positive when the impact on the base product is included. However, if we include the incremental impact on base product revenue when evaluating the add-on option and include the incremental impact on the option when evaluating the base product, we will have double-counted some sales when customers buy both products. This may lead to the wrong conclusion if the overall program is not financially justified. To combat this, evaluate a third model in which investing in both products is compared to not investing in either. If investing in both products is not profitable, then at most one product may be justified by its stand-alone financials. For, example, if an add-on application is expected to be a big loser, it may still be appropriate to develop the core software application. The following table

shows the possible outcomes when modeling two investments with positive sales correlation.

<b>Product A financials given Product B exists</b>	<b>Product B financials given Product A exists</b>	<b>Financials for Products A &amp; B combined</b>	<b>Invest in:</b>
Positive	Positive	Positive	A&B
Positive	Negative	Positive	A only
Negative	Positive	Positive	B only
Any	Any	Negative	A or B may be justified by its stand-alone plan.

For example, in the second scenario, the return for A alone equals the positive return for A&B plus the savings generated by not doing B. Therefore, investing in Product A is justified. This gets more complicated when more than two complimentary products are involved but fortunately some products are usually clear winners and some may be clear losers, reducing the number of permutations which need to be considered.

### **Negative Correlations**

The simplest example of a negative correlation is the design of a replacement product. To test the viability of a replacement product such as Son of Widget, one might model the stand-alone financials of the replacement product and determine the incremental effect by subtracting the stand-alone financials of the product being replaced (Widget). One can use the same technique if changing a distribution channel from indirect to direct or vice versa. The key is to fairly represent both models based on the expected market environment. For example, the expected annual sales of Son of Widget may be no higher than the current sales of Widget. However, investment in the new product may be justified if Widget sales would decrease in the future due to increased competition and/or obsolescence. Or, in the channel example, a growing market may justify moving to direct sales (push) whereas a declining market may suggest a low fixed cost indirect sales channel (pull).

In the example of investing in a product which will siphon off some of the customers from other products, one can compare the financial plan for the combination of the two or more products with the financial plan for the status quo. Again, the future environment must be fairly projected. For example, if the company chooses not to add granularity to its product line, a competitor might, siphoning off sales anyway.

In summary, a proper investment analysis needs to reflect all sales correlations. This can be achieved by generalizing the above examples. In some cases, this may require analyzing several permutations of correlated investments to find the optimum.

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