Contract Manufacturing & Electronics Assembly

Outsourcing cost analysis:

A formula for success

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What would it cost to outsource the manufacturing fulfillment of your electronics-based product or sub-system? What would it cost to manufacture it in-house?

The outsourcing decision involves a variety of factors, and a systematic approach to calculating your options is critical. Going with gut instinct is risky with so much of your team's time, effort and money on the line.

In this article, I hope to improve your chances for success by providing insight and tools that you can use to conduct an organized, thorough and rigorous Outsourcing Cost Analysis. I'll help you to build an Outsourcing Cost Analysis Spreadsheet that you'll refine and reuse over the life of your product. I've provided a sample sheet with hypothetical numbers to get you started.

Whether you're planning your first product introduction or considering getting out of production yourself and moving fulfillment to a Contract Manufacturer (CM), the following system will help to reduce the risk to your enterprise and quantify the potential benefits.

Know your cost items related to production

Begin by creating a list of items that identifies the key cost drivers of your project. Any number of cost items could be involved in a project and these will become part of your calculations. Be sure to consider each of these cost elements, in addition to any that may be unique to your product or industry:

- purchasing
- supplier management
- manufacturing engineering
- inventory control
- shipping
- receiving
- customs brokerage
- inventory space
- equipment costs
- maintenance costs
- production space costs
- energy costs
- rework (costs of poor quality)
- test development and support costs
- calibration costs
- IT costs
- training
- environmental compliance

You may also consider adding amounts for intangible items. Outsourcing manufacturing may have a positive effect on innovation. It may allow your sales and marketing team to better focus on new products and markets. Outsourcing allows you to focus on strategic strengths. These value-adds should be factored in to your calculations as well.

The spreadsheet workbook has a first sheet (named "Outsourcing Cost Impact") with a starting list. Your cost model will evolve over time; you will refine it as you move forward with the project planning.

Cost of Capital

When assessing the viability of a project like this, it's important to have a good estimate of your Weighted Average Cost of Capital (WACC). While a thorough discussion of this subject is beyond this article, many resources are readily available to help you with this portion of the task if it's new to you.

Forecasting Profit and Loss

Next, make a copy of your Income Statement to use for the analysis. Create a column with your expected values for the current year (like column B in the sample). This is the base case; there is no change from your current operations.

Adjust this model to create an approximation for cash flow at the bottom of the column. Add back estimates for non-cash items and changes in working capital. The result at the bottom of the column (cell B43 in the sample) is an estimate of the net cash flow for this scenario.

Next, we need to model the outsourcing scenario in the starting year. Take a copy of your base case (column B) and paste it beside in column C. Consider each of the items you listed before and estimate how outsourcing will impact your company financially. Include items that may generate cash on a one-time basis. You can generate cash by selling inventories of raw materials, and equipment. You may also want to factor in changes to the timing of your cash cycle if that is significant (perhaps Accounts Payable will drop).

Update the items on the outsourcing scenario to reflect revised values that result from outsourcing. Continue this until you are happy with the net cash flow estimate for the outsourcing scenario for year 0. If you like, you can simplify by consolidating lines that don't change between scenarios.

As you populate the cells of the calculation spreadsheet with numbers, it is important that the figures you use are not merely assumptions. Talk to an experienced CM to get a realistic idea of the specific costs involved. For example, the costs associated with stencils, documentation, programming, and testing can vary sharply. You want to have real sense of what these costs will be relevant to your project. The CM should be willing to sit down with you to go through these costs in detail.

To evaluate the impact of outsourcing over a longer period (perhaps 2 years or 5 years), take copies of your year 0 analysis and to update for future years. In addition to costs, you'll also want to consider incomes. Outsourcing can allow a company to focus on core strengths to drive growth.

Differential Analysis

The difference between the net cash flow number for the outsource scenario and the in-house scenario is the net value of the proposed change. In the sample spreadsheet, this this shown on row 44 as Savings.

If you are analyzing over a longer period of time, you need to discount future savings using your WACC to account for the time value of money (i.e. $1000 in hand now is more valuable than $1000 delivered 5 years from now due to interest that could be earned).

This is not difficult and is already shown in the sample spreadsheet on row 45 as Present Value of Savings. The sum of all the discounted savings is the estimated Net Present Value of outsourcing. If this value is positive, outsourcing is a viable project for you to undertake. At this point, your model is pretty much complete.

It does take a little time and effort to produce a model like this, but, as you can see, the tool is a powerful one. A change such as outsourcing can be significant for a business, so it really makes sense to take the time to model the potential results and convince yourself of the benefits before beginning.

For more information on outsourcing the manufacture of your niche (low- to mid-volume) electronics product fro OCM Manufacturing, go to http://ept.hotims.com/51126-87

Differential Analysis - Outsourcing Production

	Weighted Average Cost of Capital	14%					
	Period	Year 0		Year 1		Year 2	
	Scenario	In-house	Outsource	In-house	Outsource	In-house	Outsource
	Column A	**B**	**C**	**D**	**E**	**F**	**G**
	Revenue						
1	Product Line A	6,000,000	6,000,000	6,900,000	7,000,000	7,935,000	8,100,000
2	Product Line B	12,000,000	12,000,000	13,800,000	14,100,000	15,870,000	16,100,000
3	Other	0	0	0	0	0	0
4	**Total Revenue**	18,000,000	18,000,000	20,700,000	21,100,000	23,805,000	24,200,000
	Cost of Goods Sold						
5	Prod A - Material	2,880,000	3,456,000	3,312,000	3,974,400	3,808,800	4,570,560
6	Prod A - Labour	720,000	0	828,000	0	952,200	0
7	Prod B - Material	6,720,000	8,064,000	7,728,000	9,273,600	8,887,200	10,664,640
8	Prod B - Labour	1,680,000	0	1,932,000	0	2,221,800	0
9	Inventory Adjustments	30,000	10,000	30,000	10,000	30,000	10,000
10	Indirect Labour	144,000	30,000	144,000	30,000	144,000	30,000
11	CPP, EHT, EI, WSIB, Benefits	132,000	3,000	132,000	3,000	132,000	3,000
12	Bad Debts	12,000	12,000	12,000	12,000	12,000	12,000
13	Commissions	60,000	60,000	60,000	60,000	60,000	60,000
14	Discounts	0	0	0	0	0	0
15	Freight	240,000	140,000	240,000	140,000	240,000	140,000
16	Brokerage	120,000	10,000	120,000	10,000	120,000	10,000
17	Purchase Returns	48,000	0	48,000	0	48,000	0
18	Maintenance	60,000	5,000	60,000	5,000	60,000	5,000
19	Supplies	96,000	2,000	96,000	2,000	96,000	2,000
20	Other CoGS	0	0	0	0	0	0
21	**Total Cost of Goods Sold**	12,942,000	11,792,000	14,742,000	13,520,000	16,812,000	15,507,200
22	**Gross Profit**	5,058,000	6,208,000	5,958,000	7,580,000	6,993,000	8,692,800
23		28%	34%	29%	36%	29%	36%
	Operating Expenses						
24	Inventory	15,000	2,000	15,000	2,000	15,000	2,000
25	Shipping/Receiving	15,000	2,000	15,000	2,000	15,000	2,000
26	Supply Chain	15,000	7,500	15,000	2,000	15,000	2,000
27	Mfg Engineering	25,000	25,000	25,000	8,000	25,000	8,000
28	Administration	25,000	18,000	25,000	18,000	25,000	18,000
29	Marketing & Sales	15,000	25,000	15,000	25,000	15,000	25,000
30	Facilities	65,000	40,000	65,000	30,000	65,000	30,000
31	Interest	7,500	7,500	7,500	7,500	7,500	7,500
32	Depreciation	25,000	5,000	25,000	5,000	25,000	5,000
33	**Total Operating Expenses**	207,500	132,000	207,500	99,500	207,500	99,500
34	Net Earnings (Loss) for the Period	4,850,500	6,076,000	5,750,500	7,480,500	6,785,500	8,593,300
35	Add back Depreciation	25,000	5,000	25,000	5,000	25,000	5,000
36	Add back debt repayment	5,000	5,000	5,000	4,000	5,000	4,000
37	Change in AR	0	50,000	0	0	0	0
38	Change in Inventory	0	600,000	0	0	0	0
39	Change in WIP	0	200,000	0	0	0	0
40	Change in Prepaid Expenses	0	0	0	0	0	0
41	Change in AP	0	200,000	0	0	0	0
42	Change in Equipment	0	150,000	0	0	0	0
43	Approximate Cash Flow	4,880,500	7,286,000	5,780,500	7,489,500	6,815,500	8,602,300
44	Cash Savings		2,405,500		1,709,000		1,786,800
45	**Present Value of Savings**		2,405,500		1,499,123		1,374,885
46	**Net Present Value**	5,279,507					