

A Cash Flow Approach to Make or Buy Decisions

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One of the most critical decisions facing manufacturing managers is whether to make or buy a product or component from an outside supplier. Strategic issues, core technologies, and basic management philosophy all enter into this decision. These are not trivial decisions that can be delegated to a clerk who compares a "cost to make" to a purchase price. Rather, these decisions must be made at the highest levels of the organization because of the dramatic impact they have on the fundamental operation of the company.

Financial analysis is important to this decision, but it comes into play only after the strategic analysis is completed. Furthermore, the financial analysis must be based on an evaluation of cash flows instead of on "costs." This paper presents a discussion of the type of cash flow analysis appropriate for the make or buy decision.

Make or Buy Decision — A Strategic Choice

A make or buy decision is part of the strategic decision making process at a manufacturing organization. Ideally, a company

decides what its core competencies are, builds an organization to protect and enhance these resources, and considers the possible purchase of any part or service not in the core set. Thus a jet engine manufacturer might decide that the ability to do the precision machining required to produce fan blades for jet engines is a part of the core technology for the company, so these processes will remain in-house regardless of their cost outside.

In the same way a heavy equipment manufacturer might decide that the ability to convert a piece of metal into a valuable part is critical to the long term survival of the business, so sophisticated metalworking must remain in-house although the castings from which the parts are made can be purchased from outside if economically feasible.

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Cost Analysis of Make or Buy Decision

Cost of Purchasing from Outside	
Monthly payments to supplier ($\$20 \times 20,000$ units)	\$400,000
Freight costs	8,000
Handling cost (three material moves \times \$.65 cost per move \times 20,000 units)	39,000
Total monthly cost of outside purchase	\$447,000
Cost of Making Part	
Material costs ($\$17 \times 20,000$ units)	\$340,000
Labor costs (20 minutes \times \$.30 per minute \times 20,000 units)	12,000
Stamping (three impressions \times \$.32 per impression \times 20,000 units)	19,200
Welding (3 welds \times \$.45 per weld \times 20,000 units)	27,000
Material handling (five moves \times \$.65 per move \times 20,000)	65,000
Total monthly cost of making	\$463,200

Figure 1.

Cash Flow Analysis of Make or Buy Decision

Cash Outflow Eliminated by Not Purchasing	
Monthly payments to supplier ($\$20 \times 20,000$ units)	\$400,000
Freight costs	8,000
Total monthly cash outflows eliminated	\$408,000
Cash Outflow Increase Caused by Making Part	
Material costs ($\$17 \times 20,000$ units)	\$340,000
Welding (3 welds \times \$.05 per weld \times 20,000 units)	3,000
Total monthly cash outflows put in place	\$343,000

Figure 2.

than the outsourcing company. A firm must decide which technologies are the core of its business and which are peripheral, and only the peripheral parts and components are eligible for purchase from the outside.

The Economics of Make or Buy

Once top executives have decided on the parts and components eligible for purchase from outsiders, managers are ready to perform economic analyses on these eligible items. At first glance this looks easy. "Just compare the cost of making the part to the purchase price" sounds like good advice. However, there are some problems with this approach.

Just What is A "Cost," Anyway?

Just consider the meaning of cost; "the cost of making a part" can have many different meanings depending on how one wants to use the cost. The "cost" of a part that accountants use to prepare financial statements for stockholders is quite different from the "cost" to make one more unit after a machine is already set up to run 100 parts; and, this latter cost is different from the cost of making one more unit when only one unit will be run from the setup. A part produced with idle resources has a radically different cost from the same part produced on bottleneck resources. We can go on defining additional unit costs for several pages, and each cost will have a different value from the other. Consequently, if one is to use cost as the basis for a make or buy decision, one must carefully define the precise rules needed to compute the cost to use in the analysis. Such a definition could be quite lengthy and would resemble a complex legal document.

Cost avoidance

Some managers argue for using a "cost avoidance" approach for this decision; that is, compare the cost avoided by purchasing to the cost of making. In addition to having the definitional problems just described, the cost avoidance approach can sometimes lead to what I call the "don't buy a Mercedes" fallacy. I often tell my students they can save \$50,000 per week just by stopping at the local Mercedes dealer and deciding to avoid purchasing an automobile! So avoidable cost has problems too, problems that can lead to unpredictable (and sometimes ludicrous) results.

ABC

Some authors advocate the use of activity-based costing to solve the cost measurement problems, but ABC simply converts these measurement problems into a different form. It still has all the same problems as any other cost-based approach.

The Cash Flow Approach

To avoid this complexity and possible confusion, managers can use a cash flow approach. With this approach a manager compares the periodic cash outflow eliminated by dropping the purchase or manufacture of a product to the cash outflow put in its place. Cash flow analysis requires managers to consider all the

relevant economic issues, but it avoids the ambiguities of a cost-based approach.

Defining which cash flows will increase or decrease and when they will change is much easier than trying to decide "what it really costs to make" a circuit board, for example. Cash flow analysis also readily handles one-time purchases of special tooling, new equipment, or rearrangement of plant space. It includes everything that a cost analysis includes, but it does it in a much more manageable fashion.

Cash Flow and Cost Compared

Consider the following comparison of a cost-based approach with cash flow analysis. Air Coole has developed a flow line that makes air conditioners. The line produces 90 different variations on four products, but it produces only six hours per day because of low demand for the products. Air Coole managers deliberately built the line with excess capacity because they expect output to increase over the next few years, and they plan to use the idle time they have now to train workers in advanced manufacturing techniques so their productivity will increase as product demand grows.

The plant manager is considering using some of this idle time to make a part now purchased for \$20. The line has stamping machines, robot welders, and assembly tools that could easily be used to make the part.

Using a cost-based analysis the plant accountant prepares the schedule found in Figure 1.

The accountant has carefully assigned costs to the product for every resource consumed in its production, and the analysis shows it will cost the company \$463,200 per month to make the product as compared to only \$447,000 to purchase it from the supplier. However, the cash flow analysis in the schedule in Figure 2 tells a different story.

The cost analysis includes labor, stamping, and material handling costs, but the cash flow analysis indicates no change in cash flows related to these activities because the company still needs the same number of people, the same stamping machines, and the same material handling capability even if the outside purchase stops. The only increase in cash outflows occurs in welding materials and the purchased materials. None of the other cash outflows associated with the manufacturing line change because the company

incurs these outflows whether or not it purchases the part from the outside.

Does this analysis mean Air Coole should make the part instead of buying it? Not necessarily. If company managers want to continue training workers during the idle time on the line each day, they will decide not to purchase outside even though there might be a short run cash advantage.

However, if managers decide to use this idle capacity to make the part because it fits the company strategy, then the economic analysis shows the company should bring the part in house. In other words, the economic analysis complements the strategic analysis managers make to decide whether to make or buy a part.

Conclusion

This example demonstrates how a cost-based analysis of a make or buy decision can give misleading results. However, even more important, one should recognize that no cost analysis, regardless of how the costs are computed, can provide managers with all the information they need for make or buy decisions. Company strategy is the final dictator of make or buy decisions. Ignoring company strategy in this decision is much worse than using the wrong economic analysis.

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