

Bar Code Labels: The Make or Buy Decision

Typically, comparisons of on-site versus off-site printing of bar code labels focus on cost calculations. In practice, deciding to print bar code labels in house or to outsource bar code symbol production is as dependent on your business practices, data needs, material requirements and internal resources as it is on cost.

The decision to make or buy bar code labels does not need to be made across the board for all of a company's needs. Many companies with in-house printing capabilities still outsource some labels simply because the requirements of some applications can be best met by off-site printers.

As used here, the term "print" and "printer" refer to the production of a bar code, graphics or text whether the image is printed, imaged or etched. Further, since bar code symbols can be produced by a variety of means that do not require label stock, the term "label" will be used to mean both direct imaging and imaging onto a separate label.

It should be noted that, in large companies, with established photo-imaging or printing facilities, the make-or-buy decision is not necessarily pertinent. However, the decision criteria outlined in this article can help determine whether to use a "demand" printing technology or to use "commercial" capabilities.

This guideline will review all of these factors and attempt to put them in perspective.

Special Requirements

First and foremost, special requirements need to be evaluated. (Most evaluations start with the question of whether fixed or variable data is required on the label. However, applications requiring materials or processes not available for in-house printed, labels will have to be printed off site.)

A wide range of substrates, adhesives, overlaminates and even colored printing supplies are available for in-house printing. An even wider range of materials and processes are available through off-site vendors.

Holographic bar codes, ultra high density (e.g., .004 inch) symbols, fiberglass and simulated woodgrain metal labels, bar codes in specific PMS colors (sometimes desired for retail applications), extremely aggressive adhesives, and unusual label stocks are special requirements that can be met by off-site printers.

A "special process" that is often overlooked is the assistance provided by off-site label printers that may not appear to be directly related to the printed symbol.

Off-site printers frequently act as full-service bureaus for their customers: maintaining databases of sequential numbers, assistance with compliance labeling issues and guaranteeing customer acceptance. For short runs, for novice labelers, and for small companies with limited in-house resources, these additional services sometimes outweigh all other considerations in the make-or-buy decision process.

Data Requirements

Printing of variable data that has very short or no lead time (such as variable weight) needs to be done in house. If the data is known in advance (for example, sequential serial numbers) or is "standard" data (such as U.P.C. numbers), then out-sourcing may be indicated.

Lead Times

Next, lead times from various vendors need to be reviewed. Some vendors offer extremely short turnaround times once a program has been established. Some companies receive data from customers, print the symbols and courier the labels out within 12 to 24 hours. If even the fastest turnaround times are too long, in-house printing is indicated.

Quantities of Waste

So far, the decision criteria have been relatively simple. Things get a little more complicated from here on.

First, how many labels do you need? Five or 500,000? At both extremes outsourcing may be the best answer. Setting up a labeling system to produce five labels a month may not be cost-effective--unless they will be produced on a printer that has some spare capacity and can produce acceptable symbols. For example, a font cartridge for a laser printer may be a very cost-effective way to produce labels for some customer or internal uses. But, it may be inappropriate for production of AIAG-style labels.

Very large runs of known data are typically produced off site. Even this is not a hard and fast rule. If, for example, you will need to produce a shipping label with addressee information, or want to use generic cartoning, it may cost very little to add bar codes to the label or printed area. In this case, equipment, media and labor costs can be prorated according to the percentage of the label or image that will be devoted exclusively to bar codes and may prove to be more cost-effective than going off site.

A factor that's often overlooked, in both on-site and off-site printing, is waste. Waste may occur through obsolescence of the data on the labels, degradation during storage (for a variety of reasons), application problems and other factors. Some figures suggest that as much as 10% should be added to the cost of off-site printed labels for waste or obsolescence. This figure may be either high or low depending on quantities, training of personnel, type of data (e.g., serial number versus U.P.C. numbers) expected product life and many other factors.

To calculate the quantities/waste factor, you must determine where the optimal quantity price break occurs from outside label printers. How many labels will you use in a month, quarter or year? If the price break indicates you should order a year's worth of labels, you then have to calculate your possible waste. If you're applying non-significant serial numbers to items, it's possible that product and model

changes won't cause obsolescence. On the other hand, U.P.C. product labels probably will be affected by product or packaging changes.

This calculation is difficult to perform exactly--except in cases where you are printing a U.P.C. symbol along with other product-specific package graphics. At that point, the cost of the bar code symbol becomes almost incidental.

So far we have only made rough determinations of when outside or in-house printing is required. In many instances, there will be applications where either off-site or in-house printing can be used. The next step may prove to be the deciding factor.

Cost Calculation

Performing cost calculations for off-site printed labels is a relatively simple task. Table 1 provides a worksheet for off-site calculations. In your calculations, you may end up with prices based on minimum orders of 5,000 labels. These costs need to be converted into the same basis as your on-site calculations, generally cost/thousand.

On-site costs are trickier to calculate. First, determine the type of label(s), bar code, text and graphics coverage and other factors. Determine anticipated number of labels needed per year, month or day (depending on your volume). Convert these quantities into convenient units of measure, generally labels per day, to determine printer speed requirements.

Determine the number and type of printers you need to achieve this volume. (This is not a trivial task.) Remember, even if he doesn't show up on the payroll, Murphy works for everyone. Never schedule 100% capacity for any in-house printing system.

Calculate consumables cost. For most thermal-transfer printers, this is simply equal to one roll of ribbon to one roll of labels. Multi-pass ribbons and ribbon saver technologies change this simple ratio. When making your initial calculations, it may be better to ignore these cost-savings options. If it's clear you can make use of demand printing technologies, the cost saving options can be factored in later. Since actual savings and performance will vary, systems that rely on these enhancements to achieve a satisfactory ROI may be too marginal to implement safely (see the "If you need to punt" section below).

A useful rule of thumb in calculating toner-based cost is that average text, on which most toner costs are based, provide for only about 10% black coverage. Bar codes need to be calculated at about 30% coverage. A typical AIAG label will be between 13% to 20% black--a significant difference if you're running high volumes of labels.

Calculations of media costs, printer speed and other variables aren't standard. The speed at which a printer can feed label stock and the speed at which it prints bar codes may be significantly different. Also, the time to format and print the first label, or variable-data label, is generally much different from the speed with which it prints subsequent labels.