Reverse auctions in industrial marketing and buying

Larry R. Smeltzer
Professor, Supply Chain Management, Arizona State University, Tempe, Arizona

Amelia Carr
Professor of Operations Management, The Ohio State University, Columbus, Ohio

Reverse auctions have been a popular topic over the past several years because they often result in tremendous savings for buyers and new markets for sellers. But they also carry risks. Three primary motivations, three potential disadvantages, and four conditions and related guidelines for success are reported here. If a reverse auction is to succeed, the product or service specifications must be clear and comprehensive, the purchase must be large enough to provide an incentive for the supplier to participate in the auction, the appropriate supply market conditions must exist, and the appropriate organizational infrastructure must be in place.

Auctions may be one of the world's oldest commercial tools. Their use has been reported as early as 500 BC in Babylon, and several references are made in Roman history to auctioning everything from the spoils of war to royal furniture. Most historical references mention the English progressive auction that is derived from the Latin root *auctus,* "an increase."

But today the auction is different. E-commerce has matured and reverse electronic auctions have received as much as or more attention than any other electronic tool. Why? Many companies, including Quaker Oats, United Technologies, and SmithKlineBeecham, report millions of dollars of savings with reverse auctions compared to traditional industrial buying methods. And many consulting firms are hyping the advantages of reverse auctions for both buyers and sellers.

As a result of all this attention, a survey conducted by *Purchasing* magazine (Porter 2000) found that 25 percent of the respondents expected to use reverse auctions in 2000, and that number is expected to rise during the next several years. Various estimates indicate that billions of dollars of industrial goods will be purchased in reverse auctions by 2004 as the tool becomes more commonly used. With this level of estimated use, no doubt more and more managers will be asking, "How and when should I be using reverse auctions to reduce my material and operating costs?"

What is a reverse auction?

Any auction, note McAfee and McMillan (1987), is theoretically an attempt to create a pure market with perfect information among both buyers and sellers. The ideal is for everyone to understand the product being auctioned and to know the latest bid price. The forward auction, in which the seller offers a product to numerous buyers, is the most common type. The seller "controls" the market because it is offering a product in demand by a number of buyers. The price the buyers offer continues to increase until a theoretical rational price is met in the market. Supply and demand set the price.

In a reverse auction, the desired item is offered by a number of sellers, so the buyer controls the market. The price the sellers offer continues to decrease until a theoretical rational market price is achieved. An electronic auction brings the buyers and sellers together via some type of electronic media, usually the Internet. In fact, reverse auctions gained popularity with the advent of economical and efficient electronic capabilities, and are often only feasible when used electronically, via the Net. Here, however, the process will be referred to simply as a reverse auction rather than an electronic reverse auction.

A reverse auction may result in "dynamic pricing," which means that the price for the item being auctioned changes instantaneously because of the electronic format. As sellers observe the price changing in real time, the assumption is that it will continue to fall until a rational market price is established. In economic terms, a balanced market for a particular item is established between buyer and sellers. Again, the price is theoretically established by perfect information about supply and demand. The basic premise is that supply and the sellers' profit margin are sufficient to offer lower prices. The suppliers can instantaneously observe the prices being offered by other sellers. And the seller can see the price levels required to obtain the sale.

There are both advantages and disadvantages to using reverse auctions, as well as a few conditions that lead to their success. Our discussion of these factors is based not only on the current literature but also on in-depth interviews with 41 managers who have used electronic reverse auctions (see **Figure 1**).

Sellers' and buyers' reasons for using reverse auctions

Any new management tool may face skepticism, but both buyers and sellers have good reasons for using reverse auctions. The primary reason for sellers is the promise of increased business. In a traditional industrial market, a seller must often respond to a Request for Quote (RFQ) knowing little about the market's general pricing structure and the specific competition. Because the competition's price level is unknown, the seller may bid a price that could have been lower while still maintaining a suitable profit. With reverse auction dynamic pricing, in contrast, the seller can immediately observe the competition's price level. Hypothetically, the seller should be able to bid a price that allows for an acceptable profit but easily see when it is no longer feasible to remain in the competition for the sale.

This is highly related to another seller benefit: penetrating new markets. Market penetration may be easier when a seller can readily observe the pricing required for a sale within the new market. A seller willing to sacrifice profits initially in order to penetrate a market can determine the exact required price. This is not possible with the traditional paper bid process.

In addition to understanding the competition's pricing, the seller has less paperwork and and a low corresponding cycle time between bidding and awarding business. Simple electronic entries may be the only requirement once the seller has been qualified. Consequently, the seller should be better able to plan production scheduling and reduce excess inventory levels because less time is lost between the bid and the actual sale.

Reduced purchase prices, administrative costs, and inventory levels are the main promises that entice buyers to use reverse auctions. The incentive of low prices was what initially caught most buyers' attention. With claims of as much as 20 percent price cuts and an average between 5 and 12 percent, it is not surprising that buyers would be interested.

Another compelling incentive for buyers is similar to that for suppliers: the ability to cut administrative costs. The typical RFQ scenario follows these eight basic steps: (1) write specifications, (2) identify suppliers, (3) qualify suppliers, (4) mail RFQs, (5) wait for responses, (6) evaluate responses, (7) notify selected supplier, and (8) negotiate final terms and conditions. For reverse auctions, the first three steps require about the same amount of time; however, Steps 4 through 7 are dramatically faster. As much as 50 percent of the purchasing cycle time may be eliminated, with an average range of 25 to 35 percent.

Reduced inventory level is the third incentive for buyers to use reverse auctions. Inventories can be replenished quickly and less buffer stock is needed. This is especially important for companies that manage irregular demands.

Potential disadvantages of reverse auctions

Although reverse auctions hold many promises, several potential shortcomings exist for both sellers and buyers. The strongest disadvantage for sellers may be that the purchase decision is based entirely on the lowest price. When this is the case, the buyer develops no loyalty to the seller, and no future business may be anticipated. Any investment made to obtain the order, such as revised work processes, employee training, or capital expenditures, will not be recovered from the buyer.