



Online Auctions

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During the late 1990's, there was a surge in demand for online auctions. Many corporate managers believed that reverse auctions, where suppliers bid for large purchases of materials, were the answer to reducing overall procurement costs. Many purchasing managers thought that by establishing an auction under specific rules, the best possible price would result. Several companies that offered online auction services received a great deal of publicity in the business press, and stock prices for these companies surged.

Taking a longer view, the reality of reverse auctions came into sharp perspective today with the announcement of a merger within the service and software industry. In an article printed by the *Wall Street Journal* titled "Ariba to Buy FreeMarkets for About \$493 Million," Marcelo Prince (1-23-04) makes the following important points about the merger:

- Both companies have experienced a sharp drop in demand for their auction software and products.

- Stock values for both companies are 3% of peaks achieved in 2000.

- Managers from both firms emphasized that the merger would create synergies, but also stressed the merger would result in less operating costs for the combined company.

This development raises questions concerning the viability of reverse auctions as a fundamental tool for procurement. Some companies have decided to do their own auctions without the benefit of a third party service or software. This might have led to the decrease in business experienced by Ariba and FreeMarkets. However, it is also true that many firms have experienced mixed results in practice.

For example, transportation procurement was an early target for high tech bidding systems. The idea was to streamline a complex purchasing process by structuring a bidding system that focused on specific transportation lanes. The assumption was that carriers had complete knowledge of their cost structure in advance and could bid in a rational manner.

The reality proved much different. In one case involving a reverse auction by a large US retailer, a carrier won a significant amount of business with a low bid. During the course of the auction, the carrier took an aggressive posture and out bid other competitors. However, the carrier eventually went bankrupt because managers had not accurately forecast the cost of the new business. This also caused problems for the retailer in finding new carriers on short notice.

Much of the recent trend toward online bidding systems traces to an academic area known as *game theory*. John von Neumann and Oskar Morgenstern published the first book on the topic in 1944 titled Theory of Games and Economic Behavior. The book offered a way to understand the how competitors react in game situations directed by rules of engagement such as contracts or trade agreements, or in other situations where no rules exist.

An article in *Harvard Business Review*, “The Right Game: Use Game Theory to Shape Strategy” (A.M. Brandenburger & B.J. Nalebuff, July-August 1995) brought these concepts to the business community as a basis for formulation of strategy. From the article, the authors offer a nice summary of rules based games:

“For rules-based games, game theory offers the principle, ‘To every action, there is a reaction. But, unlike Newton’s third law of motion, the reaction is not programmed to be equal and opposite. To analyze how other players will react to your move, you need to play out all the reactions (including yours) to their actions as far ahead as possible. You have to look forward far into the game and then reason backward to figure out which of today’s actions will lead you to where you want to end up.’”

The thrust of Brandenburger & Nalebuff’s article deals with formation of business strategy and market positioning. The authors outline several examples of how game theory works as businesses attempt to plan resource deployment against competitors and to achieve long-term profits.

However, taking game theory from the realm of corporate strategy to application in the procurement of materials offers unique challenges.

Many reverse auction service and software providers focused on rules-based bidding systems that use elements and the spirit of game theory. However, as Brandenburger & Nalebuff put forth, the reactions of competitors in bidding situation is often not rational, and seldom follows a predictable path.

A case in point, in the late 1990’s a consumer goods company decided to use online auction services to procure a basic commodity used as an ingredient in a wide range of products. The size of the lot for bid was 5 million gallons and represented a full year of requirements. Five suppliers, who had done business with the company previously, were sent a prospectus for the online auction that included the rules of the game. These rules were simple:

- 1) The auction would be online allowing all participants the same opportunity to bid,
- 2) At the end of each round, the firm bidding the lowest price received the right to specify the quantity of the total lot for which the bid price applied,
- 3) The rounds would continue until the entire lot (5 million gallons) was sold.

Management anticipated that suppliers would start out conservatively, bidding low but taking only a small amount of the full lot in each round. The results were entirely different.

On the first round, the largest of the suppliers started the bid process with a reasonable price, very close to the market average. The other four suppliers, not wishing to disclose their strategy too early, decided not to bid at all for the first round. The winner of the first round then had the opportunity to specify the amount of the total lot for which the price applied. To the surprise of everyone, the supplier chose the entire lot, thus ending the bidding process. Within several minutes, the auction was over and the company found that it had saved no money relative to the average market price and it was now locked into doing business with a single supplier.

Management concluded that they could have had a better deal if standard negotiation techniques were used rather than the online bidding.

In other cases, where a number of small suppliers existed, online auctions resulted in initial price decreases of 20% using a similar set of rules for engagement.

With the rapid consolidation of services and software, it remains unclear the impact online bidding systems will have going forward. It might be that these services apply only to special situations where a) highly competitive markets already exist; b) suppliers have cost accounting systems that accurately project costs; and c) where items for bid are easy to specify.

APICS members need to consider the situations where online bidding might be advantageous. To assume that online bidding systems will always yield a better price is not accurate based on anecdotal information from those who have used these services. Game theory is a good tool to use for formulating corporate strategy. However, successful application to bid systems probably requires more research to understand the implications.

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