

# Reverse Auctions: Benefits, Challenges, and Best Practices

Gus Manoochehri

*California State University, Fullerton, CA*

Christy Lindsay

*Irvine Company, Newport Beach, CA*

---

Taking advantage of new developments in technology, reverse auctions have significantly changed the way many companies conduct their purchasing. For buyers, the primary benefits include reduced purchase price, increased market efficiency, higher procurement process efficiency, and access to a larger supplier base. However, application of reverse auctions can bring major risks and challenges. It can lead to deterioration of strategic supplier relationships, loss of trust, erosion of supply chain, and ultimately to higher total cost of purchased items. To effectively utilize reverse auctions, management must consider the nature of product, nature of market, and the nature of buyer-supplier relationship.

---

## I. INTRODUCTION

Recent advances in electronics and internet technologies have had major impacts on supply chain management and, in particular, on sourcing strategies and practices. One such development that has attracted the attention of many companies and gained popularity is the reverse auctions, also referred to as electronic or online reverse auctions. Over the past few years, many companies in a variety of industries have started using reverse auctions. The list includes GE, Boeing, Sun Microsystems, Hewlett-Packard, Proctor & Gamble and Dow Chemical, just to name a few. The 2006 Purchasing's Annual Benchmark E-Sourcing Survey showed that 31% of respondents saying they use reverse auctions. This is a dramatic increase compared to 15% use in 2003 (Hannon, 2006).

The objective of this paper is to explore the developments and applications of reverse auction in order to identify its benefits and challenges as well as the best practices for its successful application. Findings of such research can provide beneficial information to sourcing

professionals, help to understand strengths and weaknesses of reverse auction and provide guidance for its effective applications. The research methodology includes review of literature on reverse auction models and frameworks, real world applications, and survey results of companies that have participated in reverse auctions. The results of this research are organized and presented in four parts. After a brief review of reverse auction process the benefits of reverse auctions are presented. That is followed by a discussion of the challenges in implementing reverse auctions. Finally, the last section presents the best practices—effective reverse auction implementation.

## II. THE REVERSE AUCTION PROCESS

In the traditional auctions, also referred to as forward auctions, a seller offers a product that is demanded by several buyers who compete and bid up the price. The highest bidder wins and buys the product. In a reverse auction, it is the

buyer who is in control of the process. The buyer is interested in an item offered by a number of sellers who compete and lower their price in order to get the deal. Unlike traditional auctions that occur at physical locations, reverse auctions are accessed online, through web browsers, via private software companies known as “market makers.” The market makers facilitate the auction process and provide support, training and all necessary software to suppliers participating in the bidding process. The reverse auctions process starts with the buyer preparing and posting an electronic request for quote (RFQ) to a web site. Through the use of RFQs, the company electronically communicates its expectations to prospective suppliers. Once the RFQ is prepared and posted, selected suppliers are invited to bid. These suppliers have been screened and pre-qualified based on established standards.

Reverse auctions can be either open- or sealed-bid. In a sealed-bid auction, after the buyer posts the RFQ, suppliers have a few days or weeks to submit a bid. Only the supplier and the buyer are aware of the details of the bid. The buyer reviews all the bids and either makes a decision or, if not satisfied, proceeds with another round of bidding. Most reverse auctions are of open-bid format. In an open-bid auction, once the RFQ is posted, suppliers start posting their bids on a site bulletin board at a designated day and time. The bidding process generally takes three to eight hours. In this format the buyer and all suppliers can view bids as they are posted. The suppliers’ ability to view other bids creates a more competitive environment that encourages suppliers to outbid their competition, if financially feasible. Of course, one supplier’s attempt to outbid a competitor, can lead to a response from that competitor, or another, with yet a lower price.

### **III. BENEFITS OF REVERSE AUCTIONS**

Reverse auctions offer some significant benefits. The buyer is the primary beneficiary. While it is

claimed that there are some distinct benefits for the suppliers, case studies and surveys of suppliers do not support these claims (Giampietro and Emiliani, 2007; Jap, 2003). Key benefits of reverse auctions include reduction of purchasing costs, increased efficiency in the market, enhancement of the procurement process, and access to a global supplier base.

#### **Purchasing Cost Reduction**

The most obvious benefit from reverse auctions is in purchasing cost savings to the buyer. As any dollar saved in purchasing cost adds a dollar to the bottom line, reduction of procurement costs has always been a high priority for top management. Reverse auctions can have significant impact on reducing purchasing cost. One beneficiary is Rio Grande Regional Hospital, which was able to reduce its cost for contract nurses from \$850,000 a quarter down to \$300,000. To fill the gaps in its nursing schedule the hospital traditionally used contract nurses hired through agencies that charge as much as \$75 per hour, while staff nurse average charge is around \$25 per hour. By using reverse auctions, the hospital goes directly to the qualified nurses and allows them to bid for available shifts, with the lowest bidder winning the shift (Martin, 2006).

Because many companies that use reverse auctions buy in volume, they are able to take even greater advantage of cost savings. The significant savings has allowed companies to enjoy short-term profit increases and steep returns on investments. Also, because the reverse auctions are conducted at a much faster pace than traditional auctions, savings are realized much more quickly.

#### **Increased Market Efficiency**

The ability of the market to bring buyers and sellers together in an open environment is critical in indicating the true value of a product or service. Online reverse auctions do that very effectively. Reverse auctions effectiveness can be attributed to the following factors:

- Suppliers are able to see the bids of others and thus buyers benefit from vendors “fighting the price out.”
- Bidding is not limited to those physically present. It removes geographical limitations and leads to global searches for the best price.
- The reverse auction’s ability to include a larger number of suppliers and keep the bidding process transparent, makes it possible for a supplier’s excess capacity to be effectively utilized to meet the buyer’s demand.

### **Procurement Process Efficiency**

Another significant factor for both buyers and sellers is the improved smoothness and speed of the procurement process. The reverse auctions are much faster than traditional auctions. Traditional auctions average about six weeks in duration, while online auctions are typically completed in 3 to 8 hours (Jap, 2003). All the paperwork and communications through mail, fax, phone calls and negotiations through multiple rounds of bidding are eliminated. Decisions are made with a click of the mouse, and negotiations are concluded within one business day. In a sense, negotiation is relegated to a system that allows suppliers to negotiate among themselves.

### **Access to a Larger Supplier Base**

With traditional bidding, companies were limited to selecting only suppliers in their geographic regions with whom they were familiar. The technological capabilities of reverse auctions can spread a much wider net, around the globe, and allow companies thousands of miles away to compete. It can also increase the supplier base by providing the opportunity for smaller companies to compete. The reverse auction is a more open and transparent process and gives newer companies a chance to compete as long as they meet the buyer’s qualification standards.

## **IV. CHALLENGES IN IMPLEMENTING REVERSE AUCTIONS**

There are several challenges associated with implementing successful online reverse auction projects. While suppliers face most of the challenges, buyers can face serious obstacles as well.

### **4.1 Challenges Facing Buyers**

**Jeopardizing Strategic Relationships.** Reverse auctions seem to contradict the recent trend focusing on strategic relationships and partnership with suppliers which is needed in order to maximize efficiency and effectiveness in the supply chain. By focusing excessively on price, the online reverse auction has caused a move away from the close partnerships that were once successfully working for both buyers and sellers. A recent empirical study concluded that high emphasis on two main benefits of reverse auctions, purchase price reduction and time savings (procurement process efficiency), negatively impact the buyer-supplier cooperation and suppliers’ strategic relationships (Pearcy et al., 2007)

### **Higher Ultimate Purchase Cost.**

While focusing on finding the supplier with the lowest price, the reverse auction process may ultimately lead to higher actual costs as other non-price factors are not considered in the process. Competitive priorities such as quality, delivery reliability and timing, flexibility, and technological capabilities can be traded off for lower unit price. Although the RFQ can define the requirements for non-price factors, the winning factor is the unit price. In order to win the bid, a supplier has to lower its margin to a bare minimum. With such a low margin, there is no room for any adjusting and adapting to unforeseen situations. Further, the process of learning to work with a new low-cost supplier can push up the buyer’s total cost of goods (Nair, 2005).

Erosion of Supply Chain. The initial purchase cost savings brought about by reverse auctions cannot be maintained over a long time period. Purchase cost reductions will not continue at the same rate. After an initial period, market inefficiencies will be eliminated and prices will become stable. As a result non-competitive suppliers will be eliminated. However, if the price drops further, some viable suppliers will not be able to survive. Gradually, some will be pushed out of the market or have to consolidate to increase the economies of scale to support lower prices. Either way, over time, this erosion of the supply base will result in less competition and, ultimately, higher bargaining power for suppliers.

#### **4.2 Challenges Facing Suppliers**

Suppliers do not feel that they can gain much from the reverse auction, but rather have much to lose. There are widespread complaints and concerns among incumbent suppliers about the negative impacts of reverse auctions on their margin erosion and loss of sales volume (Emiliani, 2005).

#### **Buyers Acting Opportunistically**

The most important challenge encountered in reverse auctions is the suppliers' impression that buyers are acting opportunistically and taking advantage of suppliers. A survey of suppliers after an open-bid auction indicated that the suppliers' suspicion of buyers acting opportunistically had increased (Jap, 2003). They felt that the process was exploitative and unfair; and indicated that they would avoid such events and condemned the process. Such a negative impression is the major contributing factor to loss of trust in the buyer, which can jeopardize the long term relationship. In an empirical study, Carter and Kaufmann (2007) concluded that higher suppliers' perceptions of opportunism reduce relationship trust and increases buyer-supplier dysfunctional conflict which subsequently reduces suppliers' non-price performance.

#### **Risk of New Entrants**

The risk associated with new entrants into a particular market is another cause of supplier pessimism concerning reverse auctions. The reverse auctions process opens the door for new entrants and gives them a chance to compete with the incumbent and other known suppliers. Given that a new entrant is highly motivated to gain a new customer, it is willing to cut its profit margin to a bare minimum. In this process, the new entrant, not fully understanding the customer's requirements, may unrealistically outbid other suppliers in order to win the business.

#### **Reducing Their Products to a Commodity**

By focusing on price as the determining factor and almost ignoring all other factors, suppliers contend that the reverse auction process reduces their product to a commodity. Most companies use a "satisfying" strategy for non-price issues by specifying minimum performance levels required in categories such as quality, service, and delivery. Such specifications will be used in evaluating and pre-qualifying suppliers for participating in the auction (Kaufmann and Carter, 2004). While this approach considers the minimum level of performance for non-price issues, it cannot consider comparative levels of performance for different suppliers; and once they are pre-qualified, their performances on non-price issues are considered equal. More than 50% of suppliers surveyed after a reverse auction considered their inability to express their full capabilities a disadvantage of the electronic bidding mechanism (Jap, 2003).

#### **The Winner's Curse Risk**

In its enthusiasm for getting a contract, a supplier may suffer the winner's curse. During the reverse auction process, which takes only a few hours, a supplier may get so caught up in the competition that it offers unrealistically low prices. Cases were reported in which some suppliers actually presented bids below their

costs (Smeltzer et al., 2003). The risk of the winner's curse increases in situations where it is hard to estimate costs accurately. Given the uncertainties, the supplier who makes the most optimistic estimate gets the contract, and possibly the winner's curse.

## V. BEST PRACTICES—EFFECTIVE REVERSE AUCTION IMPLEMENTATION

Considering these benefits and challenges, it is critical to understand when the use of reverse auctions is beneficial, and recognize important requirements for successful reverse auction implementation. Feedback from companies with experience in reverse auctions has provided some guidance. These requirements can be classified into three groups: product characteristics, market characteristics, and buyer-supplier relationships.

### 5.1 Product Characteristics

A product is a better candidate for reverse auction if it is price-based; i.e., the purchase price constitutes the largest component of its value (Jap, 2002). When the purchase price is the dominant portion of the product value, then the value of the product can be easily expressed quantitatively; and therefore, reverse auction can be used to efficiently evaluate the suppliers' bids and set the purchase price. Typically, non-price-based items, where the non-price attributes are important, should be considered in a contract, requiring face-to-face negotiation and discussion to determine the market pricing.

If you can spec it, you can bid it. Reverse auction can be used more effectively if the purchase item has clearly defined attributes that can be expressed by the buyer and interpreted by suppliers the same way. The item's attributes should be translated into unambiguous specifications that cannot be misinterpreted by suppliers. Contrary to common belief, a complex item or service can be auctioned, as long as its attributes can be translated into

unambiguous specifications (Kaufmann and Carter, 2004).

The best and safest applications of reverse auction are for purchase of commodities. Such items meet the above two requirements. In addition, typically they are mature, standard products that are produced by many suppliers.

### 5.2 Market Characteristics

A high degree of competition among suppliers is a key market factor impacting the success of reverse auctions. The higher the number of competitive suppliers and the more rivalry among them, the more effective the reverse auction process will be in lowering the price. While the required minimum number of suppliers depends on the specific product and market, studies have provided a ballpark figure of four or five (Carter et al., 2004; Smeltzer et al., 2003). Empirical evidence indicates that auctions with higher numbers of suppliers are more successful (Kaufmann and Carter, 2004; Jap, 2007).

Another contributing market factor is the volume of the purchase contract. The purchase volume should be large enough to be attractive to potential suppliers. Larger volume can attract a larger number of suppliers, which in turn will lead to higher competition and lower prices. A survey of purchasing professionals with reverse auctions experience reports that a million dollars in sales was frequently used as a minimum guideline for a reverse auction, given that this figure depends on the specific product and market (Smeltzer et al., 2003).

The third market factor influencing the applicability of reverse auction is availability of excess supply capacity. If excess capacity exists in the supply base, there is incentive for the suppliers to bid in order to get more business. Then, the reverse auction can provide an effective means for suppliers and buyers to efficiently allocate the spare capacity. The reverse auction is particularly well suited to service industries, such as transportation, whose

output can't be stored and its excess capacity would otherwise be lost (Nair, 2005).

### 5.3 Buyer-Supplier Relationships

The effectiveness of reverse auction is highly impacted by the nature of buyer-supplier relationships. These relationships can be classified along a continuum (Daly and Nath, 2005). At one end of the continuum is a transactional exchange which is conducted at arms-length, is focused on the current transaction, has short term contracts, and often selects the supplier solely based on comparative price. At the other end is the relational exchange where the relationship is much closer and strategic, and other non-price attributes--such as quality, reliability, technological capability, organizational culture and goals--are critical in selecting a supplier. The buyer makes a long term commitment to the supplier, and the supplier makes substantial investments to satisfy the buyer requirements. It is evident that reverse auctions are more appropriate for transactional supplier relationships. Organizations using a transactional exchange relationship realize greater cost and time saving from reverse auctions application (Percy et al., 2007). It is recommended that the nature of each supplier relationship should be evaluated before deciding on reverse auctions applicability.

Daly and Nath (2005) contend that it is possible to design reverse auctions more conducive to relational suppliers by subsidizing relational partners for their long-term investments, making payments to cover costs of losing bidders, and even renegotiate final contact bid prices and specifications. Percy et al (2007) maintains that organizations focusing on relational exchange can use reverse auctions; but they should not overemphasize the price.

Another critical factor for the success of reverse auction is the selection of suppliers to participate in the auction. A supplier should be pre-qualified before being invited to an auction. The suppliers' capability of fulfilling the purchase contract should be verified. Nonqualified

suppliers can increase auction costs for the buyer. Furthermore, their presence reduces the credibility of the auction for other suppliers who might opt out or not pursue the bidding process sincerely.

### 5.4 Not Just Price—Consider Non-Price Issues

The primary criticism of reverse auctions is that it grants contracts based solely on price, and does not consider non-price issues. While this approach makes the process very efficient, it is not adequate for products for which non-price issues are critical. Certain variations of reverse auctions can overcome this limitation. Some companies use a "satisfying" strategy as discussed earlier. Another approach is that the buyer does not commit to the lowest bidder, but uses reverse auction as a "screening" tool to identify a few low price suppliers and subsequently considers their performance on non-price issues to select one to grant the contract. Most auctions conducted by GE use this method (Nair, 2005). To make the final decision, a face-to-face negotiation with the top bidders selected through the screening process can follow. This approach is more supplier friendly, as it allows the buyer to consider other issues where a supplier might have superiority.

More recently, multiple issue auction software and algorithms have been developed that allow consideration of a variety of issues. Several companies such as Frictionless, Ariba, Emptoris, Perfect and CommerceOne, among others, have developed systems addressing multiple issue auctions. These systems use a variety of approaches in combining the buyer's preference for different issues. A typical approach is based on eliciting the buyer's preference for these issues and programming it into a value function. Once the bids are placed, which requires suppliers' input on all issues to be considered, the value function calculates the relative desirability of suppliers. While some of these systems are pure reverse auctions, some others combine auctions and negotiations. These

systems are most comprehensive; however, they are much more complex and their applications have been limited. Sandholm (2006) discusses of one such approach called expressive commerce that combines advantages of highly expressive human negotiation with the advantages of electronic reverse auction.

## VI. CONCLUSIONS

Application of reverse auctions can result in considerable savings in purchase cost. Higher market efficiency, procurement process efficiency, and access to larger supplier base are the contributing factors to creating savings in purchase cost. These savings are the primary force behind the high popularity of reverse auctions. However it can jeopardize long term buyer-supplier relationships, reduce the suppliers' trust and cooperation. Ultimately, it can even lead to the erosion of the supply base and result in less competition and higher prices. The research indicates that many suppliers complain that through reverse auction applications, the buyers focus on price only and ignore many other suppliers' strengths and thus reducing their product to a commodity. Further, suppliers feel that the reverse auction process is exploitative and unfair, and allows buyers to act opportunistically.

Given the significant benefits and critical challenges of reverse auction application, awareness of best practices is vital to its successful implementation. The review of research findings identifies three key factors: product characteristics, market characteristics, and buyer-supplier relationships. Reverse auction works best for commodities which have attributes that are well definable and price is the dominant portion of their values; in markets with high degree of competition and rivalry among suppliers, with excess capacity; and when the buyer-supplier relationship is characterized as transactional exchange. More recent developments in reverse auction software and algorithms are increasing the capability and

flexibility of the buyers to better consider the non-price issues. Such developments can reduce some of the suppliers' resistance and improve the effectiveness of this tool.

The reverse auction is here to stay. Technology has made it possible; competition is using it and benefiting from it. In order to stay competitive and continue to strengthen their businesses, it is imperative that companies learn how to use it effectively and keep up with its new developments.

## VII. REFERENCES

- Carter, Craig R., Lutz Kaufmann, Stewart Beall, Phillip L. Carter, Thomas E. Hendrick, and Kenneth J. Petersen, "Reverse Auctions—Grounded Theory from the Buyer and Supplier Perspective," Transportation Research Part E, Vol. 40(3) 2004, 229-254.
- Carter, Craig R. and Lutz Kaufmann, "The Impact of Electronic Reverse Auctions on Supplier Performance: The Mediating Role of Relationship Variables," Journal of Supply Chain Management, Vol. 43(1), 2007, 16-26.
- Daly, Shawn P. and Prithwiraj Nath, "Reverse Auctions for Relationship Marketers," Industrial Marketing Management, Vol. 34, 2005, 157-166.
- Emiliani, M. L., "Regulating B2B Online Reverse Auctions Through Voluntary Codes of Conduct," Industrial Marketing Management, Vol. 34, 2005, 526-534.
- Giampietro, C. and M.L. Emiliani, "Coercion and Reverse Auctions," Supply Chain Management, Vol. 12(2), 2007, 75-84.
- Hannon, David, "E-Sourcing Finds Its Place," Purchasing, Vol. 135(16), 2006, 51.
- Jap, Sandy D., "Online Reverse Auctions: Issues, Themes, and Prospects for the Future," Journal of Academy of Marketing Science, Vol. 30(4) 2002, 506-525.
- Jap, Sandy D., "An Exploratory Study of the Introduction of Online Reverse Auctions,"

- Journal of Marketing, Vol. 67(7), 2003, 96-107.
- Jap, Sandy D., "The Impact of Online Reverse Auction Design on Buyer-Supplier Relationship," Journal of Marketing, Vol. 71(1), 2007, 146-159.
- Kaufmann, Lutz, and Craig Carter, "Deciding on the Mode of Negotiation: To Auction or Not to Auctions Electronically," Journal of Supply Chain Management, Vol. 40(2), 2004, 15-27.
- Martin, Zack, "I.T. Makes Bid to Curb Nursing Costs," Health Data Management, Vol. 14(1), 2006, 14.
- Nair, Anand, "Emerging Internet-Enabled Auction Mechanisms in Supply Chain," Supply Chain Management: An International Journal, Vol. 10(3), 2005, 162-168.
- Pearcy, Dawn, Larry Giunipero, and Andrew Wilson, "A Model of Relational Governance in Reverse Auctions," Journal of Supply Chain Management, Vol. 43(1), 2007, 4-15.
- Sandholm, Tuomas, "Expressive Commerce and Its Applications to Sourcing," 2006 American Association for Artificial Intelligence Conference Proceedings. Retrieved from: [www.cs.cmu.edu/~sandholm/Expressive%20commerce.iaai06.pdf](http://www.cs.cmu.edu/~sandholm/Expressive%20commerce.iaai06.pdf).
- Smeltzer, Larry R. and Amelia S. Carr, "Electronic Reverse: Promises, Risks, and Conditions for Success," Industrial Marketing Management, Vol. 32(6), 2003, 481-488.