

CURRENT RESEARCH ON REVERSE AUCTIONS: PART I -UNDERSTANDING THE NATURE OF REVERSE AUCTIONS AND THE PRICE AND PROCESS SAVINGS ASSOCIATED WITH COMPETITIVE BIDDING

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ABSTRACT

This article serves as the first part of a two-part series that will provide an overview of the reverse auction concept, building on the best research in the field of supply chain management. In this instalment, we examine the growth of reverse auctions in both private and public sector procurement. We then provide a differentiation between the more readily understood forward auction concept and the emerging practice of reverse auctioning. We then examine the two-sides of the reverse auction savings equation, looking at the “first order” savings to be derived from the use of competitive bidding to secure lower purchase prices, as well as the “second order” savings that can be achieved through making the procurement process more efficient.

KEYWORDS

Reverse Auction, Auction, e-Procurement, Acquisition, Supply Chain, Government, Public Sector, Competition, Cost Savings, Process Efficiencies, Purchasing, Procurement Strategy

1. INTRODUCTION

1.1. The Changing, Dynamic Nature of Pricing

In *Wired* magazine, James Surowiecki recently wrote a great piece about the alleged rise and fall of Internet auctions. The author chronicled how many economists’ predictions of an “auction economy” from the heyday of the formative era of e-commerce and the dot-com era have not come to pass [1]. However, while today, a majority of eBay transactions are on a fixed-price basis and many consumer auction-specific sites have gone by the wayside, the ethos of flexible, dynamic pricing has taken hold in the economy. Thus, as Surowiecki spoke to: “the real legacy of the online-auction boom and bust,” observing that: “It may not have changed how goods are priced, but it changed forever how they’re bought and sold” (n.p.) [1]. So today, it’s not just folks looking for a collectible on eBay or a cheap airline ticket by bidding on Priceline, but it’s businesses - and indeed organizations of all types - including governments - who carry forward that ethos. We have become a national - indeed, a global - culture that is price conscious - viewing pricing not as a fixed, determined number, but variable and yes, dynamic, based on the myriad factors that can affect both buyers and sellers in the marketplace. And as such, we see dynamic pricing taking gold across the economy in the form of reverse auctions for procurement.

1.2. What Are Reverse Auctions?

According to the Institute for Supply Management, in the procurement context, reverse auctions (eRAs) are: “A type of e-auction that is conducted online, in real-time, between a single buying organization and pre-qualified suppliers. Suppliers compete in presenting bids to the buyer for the supply of goods or services whose specifications for design, quantity, quality, delivery, and related terms and conditions have been clearly defined” [2]. eRAs have become a “best practice” for procurement across the corporate landscape. And they have become so not as a way to squeeze suppliers to reduce costs, but more so as a way to automate the negotiation process.

1.3. The Growth of Reverse Auctions

The procurement and supply chain management literature is replete with case studies and stories documenting how leading companies have effectively used reverse auctions, including (to name but a few):

3M

Bethlehem Steel

General Electric

Hewlett-Packard

Home Depot

Owens Corning

Southwest Airlines

Sun Microsystems

Texas Instruments

United Technologies.

Indeed, analysts have noted that among Fortune 500 companies, almost *all* private sector firms of this size employ reverse auctioning today to some extent [3]. And from a global perspective, the same is true for the worldwide list of Fortune 1000 companies. Take for instance Royal Dutch Shell, the global group of energy and petrochemical giant. Shell has used reverse auctions for procurement since 2001 and today conducts over a hundred reverse auctions a month [4]. Looking ahead, it has been projected someday soon as much as *half* of all corporate procurement could be conducted through reverse auctions [5].

While eRA use has been exploding across the private and public sector, both in the U.S. and around the world, the procurement method still has a bit of a “taboo” factor [6]. Indeed, competitive bidding is a subject that many executives still today shy away from for a variety of reasons, not the least of which is often a fear - or better yet a realization - that the practice is a “game changer” in the marketplace. Still, the value propositions for reverse auctions are quite clear. For buyers, reverse auctioning enables organizations to reap savings in both cost and procurement time, while also and expanding the pool of eligible suppliers - and thereby increasing competition. For suppliers, reverse auctions offer the prospect for reduced operating, selling and customer acquisition costs through an improved and expedited bidding process. Moreover, reverse auctions also afford vendors improved access to new markets and new

competition, while also working to ensure a more level playing field in which small businesses can effectively compete.

With well over a decade of development in electronic commerce, we have seen electronic markets (or e-markets) take on various forms and functions, at the business-to-consumer, consumer-to-consumer, and business-to-business levels, with trade being carried out online in everything from travel services to the vast array of items available on eBay. While there are many types of e-markets, they have common attributes, in that they can bring together multiple buyers and sellers in single, common online market in which the two sides of a transaction interact to match the buyer's need for a good or service with the seller's need to provide the same. And while most, if not all, of the transactions carried out in these e-markets can and have historically been executed offline, bringing the market functions online reduces the time, costs, and efforts involved for all parties, reducing search times, enabling better coordination, and lowering transaction costs [7]. As such, the "game changing" nature of electronic markets has been duly recognized, as it has been recently observed that: "These mechanisms have the potential to alter the economics of trading, and specifically for altering transaction costs by reducing information asymmetries....In short, e-markets have the potential to improve both firm and market efficiency" [8].

Reverse auctions are but one type of e-market mechanism, bringing together buyers and sellers online to arrive at a price for a given transaction. It is important to recognize the fact that the competitive environment of reverse auctions simply works to produce significant savings on prices to be paid for a whole range of goods and services. Yet, such "hard dollar" acquisition cost savings are but part of the equation. Indeed, a recent report from the University of Arkansas' Information Technology Research Institute has shown that by using reverse auctions, not only do companies save 15% on their acquisitions of goods and services, but additionally, procurement cycle times can be decreased by 90% [9]. And now, we can see that "many of the benefits of adopting reverse auctions were established by the private sector and were then confirmed by the experiences of states and government agencies" [10].

While it is known that reverse auctions "work" to save organizations time and money in their procurement operations, there is a lack of academic backing as to the specific "whys" and "hows" of this success. As Tassabehji (2010) recently observed, "the study of e-auctions is still in the early stages and there remains a dearth of substantial empirical research and much more to uncover" [11]. Mithas *et al.*, (2008) There has indeed been a dearth of academic research in the area of reverse auctions [12]. Much of the reason behind the relative paucity of research in the use of reverse auctions in the B2B (business to business) area is due to the limited availability of data, as much of it is proprietary in nature [13]. Also, one of the factors complicating empirical research in this area is the simple fact that only a relatively small percentage of procurement professionals have actually used reverse auctions [14]. The studies that have been conducted have largely been either simply descriptive or prescriptive in nature [15]. Thus, studies that elucidate details on the actual workings of reverse auctions will be of great interest to both practitioners and academicians in fields touching on supply chain management.

This is the first of two articles that will provide an overview of current research on reverse auctions for such interested parties, serving as a compendium of the most up-to-date knowledge on competitive bidding. In this first installment, we will differentiate forward and reverse auctions. Then, we will examine the nature of the savings to be derived from the use of competitive bidding and examine the growing use of this form of e-market across the procurement landscape globally, both in the private and public sectors. Finally, we will look at the two forms of supply chain efficiency that spring from the use of reverse auctioning, looking

at the hard dollar (or purchase price) savings, as well as the soft dollar savings in terms of the time and process efficiencies springing from the use of reverse auctions.

2. DIFFERENTIATING AUCTION TYPES

2.1. General Auction Categories

There is still much confusion today over what the difference is between auction types. In a nutshell, there are really only two categories of auctions - forward and reverse auctions. There may be variations with these based on a number of factors, including the progress of the auction and the criteria for determining the “winner” of the auction. These variations include:

Yankee auctions

Vickrey auctions

Japanese auctions

English auctions.

2.2. Forward Auctions

Forward auctions take the form of a single seller offering an item for sale, with buyers competing to secure the item by bidding the price upward. The characteristics of this form of auction are shown in Figure 1. Forward auctions are far-better understood by the public at large



Figure 1. Forward Auctions

than reverse auctions as to how they operate, due primarily to the fact that they are widely used at the consumer level. In fact, forward auctions underlie everything from eBay and other online auction sites to auctions of art, wine, and other collectibles. They are also widely used for auctioning everything from autos, real estate, machinery, etc., where the goal is for the seller to receive the most money possible for the item being offered at auction. Thus, a forward auction

should be utilized for sales of goods and services of all types, whether conducted online, offline, or a hybrid of the two.

2.3. Reverse Auctions

Reverse auctions are the other major form of auctions, the characteristics of which are captured in Figure 2. Reverse auctions have been fitted with a number of different labels by different organizations and different trade and academic authors. These include:

online reverse auctions

reverse e-auctions

downward price auctions

electronic reverse auctions (or the acronym e-RA).

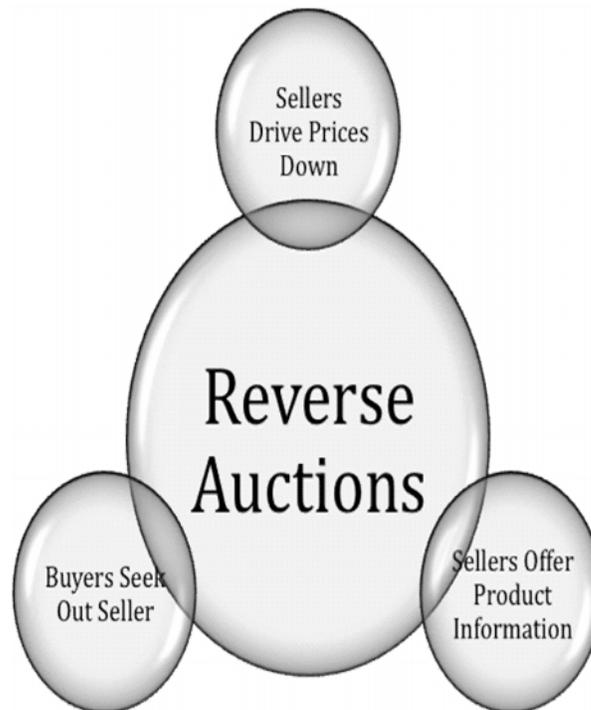


Figure 2. Reverse Auctions

Internet-based or electronic reverse auctions, or as we will interchangeably refer to them in this work as “eRAs”, are, by their very nature, a specific type of e-market, as an electronic forum or marketplace where buyers and sellers interact online to exchange information and conduct trade with one another [16]. There are three broad categories of online auctions:

C2C (consumer-to-consumer)

B2C (business-to-consumer)

B2B (business-to-business) [17].

In general, in the context of procurement, a reverse auction can be defined as “a real-time online competitive bidding event where the buyer sends out a request for quotation and suppliers bid on the business, decreasing their selling prices until optimally a true market price has been reached” [18]. In a reverse auction for procurement, a single buyer makes potential sellers aware of their intent to buy a specified good or service. During the course of the actual reverse auction event, the sellers bid against one another to secure the buyer’s business, driving the price to be paid for the item downward. Thus, the winning bidder is the seller who offers the lowest price. Reverse auctions not only use dynamic pricing; they change the dynamics of the purchasing process itself. In a reverse auction, the buyers and sellers essentially reverse their traditional roles. Rather than buyers reacting to what sellers have to offer, instead, sellers react to the buyer’s needs [19]. While there are unique applications of the methodology (for resource allocation decisions, charity auctions, etc.), reverse auctions are most typically used in procurement by private companies, public sector agencies, and non-profit organizations.

Today, we are seeing phenomenal growth in both categories of auctions, due in large part to the global reach of the Internet. Forward auctions are rapidly moving into new areas, as consumers now routinely participate in auctions for everything from electronics to travel online. While the reverse auction mechanism may be simple - having suppliers compete for the buyer’s business and driving prices down in the process, the task of managing and processing knowledge and information exchanged between the buying organization and potential vendors auction is actually a quite complex operation [20]. This is why until as of late, only the largest private sector organizations have been able to take advantage of the cost savings associated with reverse auctions, as the task is beyond the scope of most small companies and certainly public sector organizations. We are thus seeing ever-increasing numbers of organizations, both in the United States and abroad, using reverse auctions as a key part of their procurement strategies as they seek to ensure that they are obtaining best-value for their acquisition budgets by obtaining “real-time” market prices on both goods and services. With a reverse auction, a buyer can gather bids from interested suppliers, and unlike in any other procurement scenario, suppliers can participate in the bidding at very low cost and irrespective of their geographic location [21].

3. ANALYSIS: PART I – PURCHASE PRICE SAVINGS

3.1. Overview

Reverse auctions “work” in many respects due to the fact that they create an “information disequilibrium,” as they “present a unique opportunity for the buyer to obtain lower prices from the suppliers than would otherwise be possible, and thus transfer profits from the supplier to the buyer” [22]. Therefore, the ability of reverse auctions to produce significant cost savings for buying organizations is considerable. This has been proven in several recent studies in which purchasing research have found competitive bidding to produce cost savings of between 5-30% [23] and 3-37% [24]. However, the generally accepted figures are that reverse auctions can produce savings of between 10-40% [11], with some first time reverse auction savings consistently being reported at 20% [25].

The business case for employing eRAs has been categorized “compelling” for the public sector, citing the documented savings of between 5 and 40 percent typically unearthed through the competition [26]. Yet, some have questioned the accuracy of these savings rates when it comes to public sector competitive bidding, believing that for government acquisition, an average savings of 4% is a “more realistic” figure [27]. However, a recently reported study from researchers affiliated with the United Nations, which was, in effect, almost a “meta-analysis” of reverse auctions across four different governmental entities in the U.S. and Europe across a high number of auction events, showed an average savings rate of 12.1% [28].

3.2. The Power of Competition

Competition is undoubtedly at the heart of what makes reverse auctions work to drive prices lower and produce tangible, hard dollar savings. Indeed, it is the competition between suppliers that “forms the bedrock of successful reverse auctions” [21]. However, Wagner and Schwab were even more direct, stating that: “One can summarize the findings of our study as ‘all that counts is competition’. The importance that a competitive situation exists can never be over-emphasized” [15]. Recent research findings have highlighted the pivotal role that competition plays in producing reverse auction success. When dealing with either standardized or well-specified products, suppliers are more willing to compete, due to the fact that they have relative certainty as to precisely what they are bidding on and compete with confidence [14, 29]. In the public sector, it has been observed that: “As long as the government buyer has a pool of qualified suppliers that are willing to participate in a reverse auction, the power of competitive bidding and price disclosure will drive the price lower. It is important to remember that in a reverse auction, it is the power of the market and competitive bidding, not the buyer bullying the vendor that drives the pricing lower. Vendors then respond to these market price signals and adjust their pricing lower accordingly” [10].

3.3. “Real-Time” Market Pricing

Prior academic research has confirmed that the dynamic pricing of reverse auctions improves the chances that for any given procurement scenario, the buyer and selling organizations will meet at a price point that reflects the true, “fair market value” for the item in question [29]. And while we generally talk of the savings generated by reverse auctions, whether the price point arrived at through the eRA is compared to the last contracted price, a market survey, an independent estimate, or other basis, competitive bidding can produce “savings” in the form of lowering the amount by which a price increase would occur. Take for instance the case of an organization expecting a twenty percent increase in their health insurance rates. If competitive bidding through an eRA can shave that increase down to ten percent, then the organization effectively “saved” the same amount through using a reverse auction. With the present - and likely future - uncertainties in commodity pricing, we may well see more cases where competitive bidding is employed simply to “stem the tide” and lower the amount of price increases. Indeed, such instances mean that “due to market fluctuations, an effective reverse auction might actually result in a price increase” [30]. Certainly though, this will cause procurement executives and indeed, auction service providers, to have to reconsider exactly what is meant by “savings” and how such measures are calculated.

Yet, while there can be no doubt that buyers benefit from knowing that they are obtaining real-time market pricing on the goods and services they are procuring for their organization, suppliers can benefit greatly as well. This is for the fact that they can balance their internal managerial considerations with their ability to offer pricing that most benefits them at the time. For instance, if a company finds itself with excess inventory or manufacturing capacity on particular item(s), they could then offer a lower bid price in order to win competitions that would offer the supplier cost savings by lowering their carrying costs for items on hand, or alternatively, by filling idle production capabilities [31].

3.4. The Issue of Switching Costs

Switching costs are certainly a consideration for both parties in reverse auctioning. Some researchers not only include the costs involved in actually switching from receiving goods or services from one vendor to another, taking a more expansive view to include the costs associated with searching for, qualifying, and training new competitive vendors to make a switch possible from an incumbent supplier [32]. Wagner and Schwab focused on the issue of

switching costs in their research, noting that “the lower the switching costs, the more a buyer can benefit from conducting a reverse auction because switching costs would be offset by the potential savings” [15]. Thus, they noted that reverse auctions would be more likely to be used in situations where the cost of switching vendors was low or negligible. They also found that suppliers were more likely to participate in reverse auctions in such situations, for if vendors perceived that there would be high switching costs for the buyer, they would not bid out of a belief that the buying organization would not ultimately switch to a new supplier due to the level of switching costs involved versus the potential for “net” savings. Indeed, there is always a possibility that switching costs may reach a level where there is not an aggregate level of savings available that would have a reverse auction - or any e-procurement tool - make sense for a given procurement.

Because most governmental contracts of any kind are competed through one procurement vehicle or another, all buyer-seller relations can be considered as being only as long-standing as the next competition. Therefore, the potential for switching suppliers, and thus switching costs, are simply a “cost of doing business” for all parties and have to be factored into cost equations for both the buying agency and for potential suppliers. As Shalev and Asbjornsen observed: “public sector suppliers will always risk being replaced, and switching costs will be incurred in each case, regardless of the form of (competition)” [28].

3.5. The Sustainability of Reverse Auction Savings

Finally, one of the persistent questions surrounding the use of eRAs is the sustainability of such savings. Some have argued that organizations would see their chances for significant savings drop when reverse auctions are repeated for the same products [33]. However, the question becomes whether or not the important outcome is savings, or rather, is it to ensure that fair and open competition has taken place and that the buyer has succeeded in obtaining the best market price through the reverse auction competition? Let’s take for example case where an organization achieved a 20% savings on a significant buy of copy paper. Now, is it likely to achieve the same level of savings on successive buys? That depends on both internal factors (the volume/aggregation level of the specific purchase) and external factors (the number of competing suppliers, developments in the wider market, immediate supply/demand considerations, etc.). Empirical research has shown that while manufacturing firms using eRAs find - on average - 30% cost reductions in their initial reverse auctions for procurement spending, they can in fact replicate the savings in future years, seeing 10-15% savings in subsequent reverse actions [34]. This is an impressive statistic, as it proves the power of competition to produce continuing - not just one shot - savings across procurement spending, while also serving to counter one of the principal criticisms levelled at reverse auctions, namely “OK, you did it once, but can you do it again?”

4. ANALYSIS: PART II – PROCESS EFFICIENCY SAVINGS

4.1. Overview

While much attention has been paid to the “hard dollar” savings that can be achieved through the use of reverse auctions, there are also significant - and important - “soft dollar” savings associated with their use. These efficiencies come from the fact that reverse auctions, especially those conducted through a third-party provider, can significantly diminish the time required for procurement staffers to execute purchases. This “efficiency effect” was first documented in the work of Vowler [35], who examined the true cost impact of reverse auction utilization by municipal governments. He found that while 40% of the overall savings could be attributed to the lower prices paid on the items being acquired through competitive bidding, fully 60% of the total savings were attributable to the efficiencies gained by having procurement staffers take on more productive tasks in the time freed-up from the use of electronic reverse auctions over

traditional, paper and labor intensive purchasing methods. The efficiency aspects of reverse auctions in public sector procurement are profound, as the ability to dramatically reduce acquisition cycle times through the use of competitive bidding can enable acquisition staffers to put their efforts toward far more productive activities [10].

The efficiency gains produced by utilizing reverse auctioning are coming to the forefront of attention in both the academic and business realms. Schrader, Schrader & Eller have documented the process savings associated with reverse auctions, finding that the use of reverse auctions produced such “second order” savings as well, shaving up to forty percent off procurement cycle times [22]. These researchers observed that: “In addition to receiving cost savings in the form of lower prices, buyers are seeing increased productivity from their employees. With a standard interface for purchasing, redundancies are eliminated. Elimination of paper approvals and procedures leads to a substantial reduction in transaction processing costs.” Companies competing in reverse auctions also benefit from the speed of reverse auctioning in a variety of ways from a transactional perspective, in that they experience reduced cycle times for negotiations and lessened reliance on long-term commitments and contracts [36].

4.2. Time Savings

Reverse auctioning can be thought of as much more than a price lowering mechanism today. Indeed, buyers increasingly view reverse auctions as “a time-saving tool” that allows them to focus on more value-added functions in their jobs that handling bids, paperwork, and routine communications [37]. Indeed, one of the principal differences - and advantages - of reverse auctions over other procurement and negotiation methods is time [38]. Simply put, even if there is increased time that must be devoted to making sure that all parties are properly trained in how to participate in the auction and fully understand the specifications for the item(s) being contested, utilizing reverse auctioning should mean that “overall procurement time(s) should be shorter.” This is due to the compressed nature of negotiations which are carried-out through the simultaneous evaluations being made by the vendors participating in the reverse auction [39]. Simply put, with each decision to bid or not bid and lower their price to be in a lead position in the reverse auction, this means that negotiations that might have taken days or weeks to produce such price concessions are reduced to an immediate pricing decision in the auction environment.

5. CONCLUSION

This article has provided the reader with a greater understanding of the savings equation for the use of reverse auctions, looking at the “first order” savings to be derived from eRA use from lower purchase prices, as well as the “second order” savings that can be achieved through making the procurement process more efficient. In the second of this two-part article on reverse auctions, we will look at implementation issues in eRA utilization. These will include:

When reverse auctions should – and should not – be used?

How to determine the “winner” of a reverse auction?

How does the use of eRAs impact relations between the buying organization and its suppliers?

What are the advantages and disadvantages of running a reverse auction “in-house” versus making use of third-party “market makers”?

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REFERENCES

- [1] Surowiecki, J. (2011, May 17). Going, going, gone: Who the Internet auction? *Wired*. Available at http://www.wired.com/magazine/2011/05/ff_endofauction/.
- [2] The Institute for Supply Management (2003). ERAs: A CAPS research focus study. Nashville, Tennessee.
- [3] Moorhouse, A. (2008). Playing the game: effective strategies for combating reverse auctions. *Velocity*, 10(2), 25-31.
- [4] Earls, A. (2009). Reverse auctions provide good chemistry for Shell. *Purchasing*, 138(3), 36-37.
- [5] Chafkin, M. (2007). Reverse auctions: A supplier's survival guide. *Inc*, 29(5), 27-30.
- [6] Morrell, L. (2007, May 11). Under the hammer. *Retail Week*. Retrieved from Lexis-Nexis, May 22, 2011.
- [7] Grover, V. and Pradipkumar, R. (1999). Six myths of information and markets: Information technology networks, electronic commerce and the battle for consumer surplus. *MIS Quarterly*, 23(4), 465-495.
- [8] Power, D., Hanna, V., Singh, P.J. & Samson, D. (2010). Electronic markets, data access and collaboration: Relative value to performance in firm operations. *Supply Chain Management: An International Journal*, 15(3), 238-251.
- [9] Setia, P. (2009). Efficient auction design for optimal supplier behavior in reverse auctions. Working Paper Series: University of Arkansas, Sam M. Walton College of Business, Information Technology Research Institute. Available at <http://itri.uark.edu/91.asp?code=&article=ITRI-WP143-0309> (registration required).
- [10] Wheaton, G. (2010a). Government reverse auctions. *EPIQ: Advanced Supply Management*, Available at <http://www.epiqtech.com/government-reverse-auctions.htm>.
- [11] Tassabehji, R. (2010). Understanding e-auction use by procurement professionals: Motivation, attitudes and perceptions. *Supply Chain Management: An International Journal*, 15(6), 425-437.
- [12] Mithas, S., Jones, J., & Mitchell, W. (2008). Buyer intention to use Internet-enabled reverse auctions. The role of asset specificity, product specialization, and non-contractibility. *MIS Quarterly*, 32(4), 705-724.
- [13] Mithas, S., & Jones, J. (2007). Do auction parameters affect buyer surplus in e-auctions for procurement? *Production & Operations Management*, 16(4), 455-470.

- [14] Hawkins, T.G., Randall, W.S. & Whitman, C.M. (2009). An empirical examination of reverse auction appropriateness in B2B source selection. *Journal of Supply Chain Management*, 45(4): 55–71.
- [15] Wagner, S. M., & Schwab, P. A. (2004). Setting the stage for successful electronic reverse auctions. *Journal of Purchasing & Supply Management*, 10(1). 11–26.
- [16] Kaplan, S. & Sawheny, M. (2000). E-hubs: the new B2B marketplaces. *Harvard Business Review*, 78(3), 97-103.
- [17] Bapna, R., Goes, P. & Gupta A. (2001). Insights and analysis of online auctions. *Communications of the ACM*, 44(11), 43-50.
- [18] Schoenherr, T. (2004). Deciding on the appropriateness of B2B reverse auction technology: An AHP approach combined with integer programming. *Journal of International Technology and Information Management*, 13(1/2), 21-32.
- [19] Anonymous (2007). Reverse auctions 101: Moving forward by working backwards: How and why reverse auctions make dollars and sense. *Healthcare Purchasing News*, 31(7), 64-66.
- [20] Talluri, S., Narasimhan, R., & Viswanathan, S. (2007). Information technologies for procurement decisions: a decision support system for multi-attribute e-reverse auctions. *International Journal of Production Research*, 45(11), 2615-2628.
- [21] Jap, S. (2002). Online reverse auctions: Issues, themes, and prospects in the future. *Journal of the Academy of Marketing Science*, 30(4), 506-525.
- [22] Schrader, R., Schrader, J., & Eller, E. (2004). Strategic Implications of Reverse Auctions. *Journal of Business-to-Business Marketing*, 11(1/2), 61-80.
- [23] Losch, A. & Lambert, S. (2007). Information behaviour in e-reverse auctions. *Journal of Enterprise Information Management*, 20(4), 447-64.
- [24] Smart, A. & Harrison, A. (2002). Reverse auctions as a support mechanism in flexible supply chains. *International Journal of Logistics: Research and Applications*, 5(3), 275-84.
- [25] Penfield, P. (2007). 3 avenues to cost reduction. *Supply Chain Management Review*, 11(8), 30-36.
- [26] Hawkins, T.G., Coyne, A.V. & Hudgens, B.J. (2009). Electronic reverse auctions: Removing barriers to unleash savings in federal procurement. *Air Force Journal of Logistics*, 34(3 & 4), 2-15.
- [27] Singer, M., Konstantinidis, G., Roubik, E., & Beffermann, E. (2009). Does e-Procurement Save the State Money? *Journal of Public Procurement*, 9(1), 58-78.
- [28] Shalev, M.E. & Asbjornsen, S. (2010). Electronic reverse auctions and the public sector – Factors of success. *Journal of Public Procurement*, 10(3), 428-452.
- [29] Schoenherr, T. & Mabert, V.A. (2007). Online reverse auctions: common myths versus evolving reality. *Business Horizons*, 50(3), 373-84.

- [30] Frisch, K. (2004). Reverse auctions find niche in marketplace. *Government Procurement*, 12(3), 14-16.
- [31] Wyld, D.C. & Settoon, R.P. (2003), "When should you bring the tool out of the shed?: How and when reverse auctions fit as part of a corporate e-procurement strategy." *Academy of Strategic E-Commerce Journal*, 2(2), 23-28.
- [32] Leong, L. (2008). Value chain management in online reverse auction: Towards strategic and operational excellence. *Academy of Information & Management Sciences Journal*, 11(1), 13-28.
- [33] Kumar, S., & Chang, C. (2007a). Reverse auctions: How much total supply chain cost savings are there? — A conceptual overview. *Journal of Revenue & Pricing Management*, 6(2), 77-85.
- [34] Carbone, J. (2008, September 11). 5 Tips for better reverse auctions. *Purchasing*, 139, 24-26.
- [35] Vowler, J. (2004, May 11). Buy smarter. *Computer Weekly*. Available at <http://www.computerweekly.com/>.
- [36] Hartley, J.L., Lane, M.D. & Hong, Y. (2004). An exploration of the adoption of e-auctions in supply management. *IEEE Transactions on Engineering Management*, 51(2), 153-61.
- [37] Carbone, J. (2005a). Not just a cost-reduction tool: Technology frees up time for buyers to work on strategic sourcing. *Purchasing*, 134(3), 43-44.
- [38] Martinelli, E., & Marchi, G. (2007). Enabling and inhibiting factors in adoption of Electronic-Reverse auctions: A longitudinal case study in grocery retailing. *International Review of Retail, Distribution & Consumer Research*, 17(3), 203-218.
- [39] Carter, C. R., Kaufmann, L., Beall, S., Carter, P. L., Hendrick, T. E., & Petersen, K. J. (2004). Reverse auctions: Grounded theory from the buyer and supplier perspective. *Transportation Research*, 40(3), 229–254.

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In recognition of his research accomplishments, Dr. Wyld has been awarded Southeastern's "President's Award for Excellence in Research" and named a Rising Star in Government Information Technology by Federal Computer Week Magazine.