

Effective and Strategic Use of Electronic Reverse Auctions

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ABSTRACT

This paper reports the findings of an empirical study of Electronic Reverse Auctions (e-RAs). This study seeks to better understand the underlying and emerging issues in e-RAs to comprehend the implications of e-RAs on organizational procurement. The study contributes to practice and research by providing insight into emerging e-RA adoption issues, and by discussing strategies for improving e-RA processes, thus improving the effectiveness of e-RAs.

Keywords: Electronic Reverse Auctions, Electronic Procurement, Electronic Sourcing

1. INTRODUCTION

In recent years, the use of Electronic Reverse Auctions (e-RAs) for sourcing and procurement has attracted significant interest from the public and private sectors [1, 2, 3, 4, 5]. In 2001-2002, up to \$40 billion worth of procurement transactions were conducted via e-RAs [6]. Beall et al. reported that e-RAs generate an average savings of 15% on the prices paid for goods, and decrease procurement cycle time by up to 90% [7]. GlaxoSmithKline, a major pharmaceutical supplier, achieved cost savings of \$165 million, from a series of 190 e-RA events worth \$912 million [7]. Procurement represents a major spend area for organizations. Modest savings of a few percentage points can translate into multi-million dollar savings in the longer term. e-RAs promise to improve the bottomline of organizations by reducing the prices paid for supplies, as well as lowering the cost of transaction through process improvement [7].

It is not surprising that purchasing executives often face questions such as “Why should their organization adopt e-RAs for sourcing supplies?”, “Which supplies should they source through e-RAs?”, “How could organizations leverage the benefits of e-RAs?”, and “What are the potential challenges associated with e-RAs?” These questions do not have conclusive and generalizable answers as the outcome of e-RAs depends on factors such as the amount of planning and preparation, the existing relationships between the buyer and seller, and the attributes of products that are to be purchased [8]. Opponents of e-RAs are doubtful of the sustainability of e-RA benefits. They argue that incumbent suppliers view e-RAs as divisive; a mechanism that damages well-established relationships between buyers and sellers [9]. Supporters and critics of e-RAs argue passionately for and against e-RAs, clouding the discussion over how to leverage the strengths of e-RAs, and to avoid the potential pitfalls. This study aims to identify, and better understand the emerging issues in

e-RAs. The study addresses the research question:

“How should organizations adopt e-RAs effectively?”

This paper describes a case study of a series of six e-RA events hosted by a major multinational organization in Australia. In answering the principal research question, the study is also motivated by additional guiding questions that ask: *What’s new? So what? and Why so?*

2. BACKGROUND OF ELECTRONIC REVERSE AUCTIONS

Kambil and van Heck describe e-RAs as an auction process in which a single buyer places a request for a quote for a product it intends to purchase, and multiple sellers (the suppliers) place bids to sell to the buyer [10]. The bids are placed until the lowest price is discovered when the auction closes at a pre-determined time. e-RAs are also commonly known as “Online Reverse Auctions”, “Downward Price Auctions”, and “Electronic Procurement Auctions” [11, 12]. The e-RAs idea was conceptualized by Glen Meakem, who subsequently founded Freemarkets Inc [2]. e-RAs differed from English Forward auctions in that the roles of the buyer and seller are swapped, and a decremental bidding mechanism is used. They are used in procurement mainly for evaluating the offerings of competing suppliers, and for determining the purchase price of goods purchased. According to Kambil and van Heck’s Basic Trade Processes framework [13], e-RAs fulfill the business process phase known as “valuation” which is described as

“negotiating and discovering a purchase or sale price for a product. A variety of different price discovery and bidding processes exist that differentially attributes costs to buyers, sellers and intermediaries. ... Price discovery mechanisms can also be biased to shift surplus from the trade to specific transaction stakeholders.”

Literature supporting the e-RAs model typically relies on empirical evidence that illustrates the quantifiable financial savings that can be attributed to e-RAs. Jap asserts that organizations adopt e-RAs to achieve three goals – (i) immediate financial savings, (ii) process efficiency gains, and (iii) enabling capabilities such as global and multiple sourcing [5]. In a similar vein, Stockdale and Standing found that apart from direct financial savings, e-RAs also help organizations standardize procurement processes, and develop staff purchasing skills [14]. Kambil and van Heck concluded that apart from achieving financial savings, e-RAs enable buyers to gain useful market information, such as suppliers' bottomline or reserve price [10].

Critics and sceptics of e-RAs argue that the e-RA model damages buyer-supplier relationships. To win contracts through e-RAs, suppliers are pressured to sacrifice profit margin to levels that are unsustainable in the longer term. It was found that e-RAs achieve local optimization of business processes, an effect that leads to chronic underutilization of internal and external resources [11]. In a subsequent study, Emiliani and Stec also found that incumbent suppliers attempted to charge buyers higher prices to compensate for their participation in e-RAs [15]. Another strong argument against e-RAs relate to the importance of price in buyer-seller relationships. Some attributes of a product, such as delivery, settlement, after-sales support, do not feature prominently in e-RAs negotiations.

These apparently different perspectives may suggest that the e-RAs model was not fully understood by organizations, practitioners and researchers. Also, e-RAs continue to undergo evolution, with new challenges emerging every so often. This study addresses some of the above issues. Without placing too much emphasis on literature and testing of existing theories, this study concentrates on identifying the emerging issues in e-RAs from the perspectives of buyers and sellers. The study recommends strategies that target the source of the problem encountered in e-RAs [16].

3. METHODOLOGY

The study describes an exploratory study that draws data collected from a series of six e-RA events. An interpretivist approach was adopted, as many of the issues emerging may be incomplete and continue to evolve. The interpretivist approach allows for a belief that the reality is subjective, and is the product of social construction, to be viewed upon by humans, who are the social actors [17]. In capturing the properties of the subject, reality is interpreted according to the different beliefs, value systems, and consciousness of the social actors.

The study does not intend to develop a metric for determining the descriptive variables, nor is it our aim

to use inferential statistics for producing generalizable and reproducible outcomes. The aim is to develop a deeper level of understanding of the e-RA phenomenon, and aid the understanding of important concepts, themes, and their implications. Data was primarily collected through informal, semi-structured interviews. The interview questions were developed from an understanding of the constituent nature of the relationships between the stakeholders and the phenomenon, which are garnered from existing literature. Interviews were conducted with executives of the focal organization and its suppliers. Publicly available literature was used as a secondary data source. Data was then synthesized using a hermeneutics cycle to determine emerging concepts, and also for summarizing common themes.

The focal organization in the case study represents an Australian branch of a multinational organization. The parent business has a diversified portfolio of businesses, but the focal organization operates primarily in the financial sector. Its financial products are either resold by other businesses in Australia, or sold directly to the general public. Confidentiality restrictions prevent details that may lead to the identification of the participants from being included in this paper. For the purpose of the study, the focal organization is referred to as FinanceCo. FinanceCo conducted a series of e-RAs in 2000 and 2001, of which six are included in this study. e-RAs were not intended to complement FinanceCo's existing procurement channels. This paper reports the observations made, and suggests possible explanations for describing the phenomena.

4. RESEARCH FINDINGS

Analysis of the interview data and synthesis of secondary data yields the following emerging themes. The themes are presented here in no particular order of importance.

4.1 The Negotiation Parameters and Lotting Strategies

The adoption of e-RAs for procurement limits the negotiation parameters available to buyers and sellers. The only negotiation parameter that suppliers could vary in e-RAs is the purchase price. Traditionally, other non-price parameters like settlement, logistics and inventory management could be negotiated upon. In preparing the tender for the e-RAs, FinanceCo conducted substantial research on the product and the potential suppliers. It needs to find out the product's specifications, costs, the market demand and supply, and the attributes of the potential suppliers. This is to ensure that the e-RA tender document covers all possible aspects of the product. The performance, quality, and expectation of the product are usually benchmarked to industry-backed standards, or mutually agreed upon standards. Once finalized, these negotiation parameters

become non-negotiable to ensure that in evaluating and comparing the bids, a fair and just environment exists for “comparing apples with apples”.

In the e-RA event for courier and forwarding services, it was observed that a particular supplier attempted to differentiate their offerings. The supplier was willing to match an existing lowest bid by providing services that are higher in quality, but was not keen to lower the purchase price. Superficially, this bid appear to be of better value than competing bids, but FinanceCo adhered to the terms and conditions for the e-RAs strictly, and advised all bidders that all bids that satisfy the required specifications are being treated equally. In doing so, FinanceCo signaled that suppliers could add value to a bid by offering over-specifying a product, but will not win the auction if a lowest price bid was not placed.

The transparency of information in e-RAs raised other challenges associated with the absence of non-price negotiation parameters. e-RAs led to the bundling and unbundling of purchases. Components of a purchase which were bundled in the past could be purchased individually due to the increased ease in sourcing, and the ability to individually determine the price of the components. Commoditization of products also occurred, with the emergence of no-frills products, with suppliers removing free of charge value-added services in order to lower prices. For example, in the auction for hotel accommodation for staff, the inclusion of breakfast was halted to simplify the comparison of standard room accommodation. The unbundling of the purchase enabled FinanceCo to view the cost structure of its suppliers, as well as optioning-in (or -out) non-essential features of a product. Nevertheless, a re-bundling of value-added services was also observed. In the e-RA for computing peripherals, FinanceCo added a new service – a requirement for suppliers to dispose of superceded old peripherals. In e-RAs, the buyer has to be explicit in specifying delivery, settlement, product specifications and other special requirements when preparing the tender document. It is not surprising that the competitive nature of e-RAs encourages suppliers to do away with “frills” in their products, or charge for such “frills” separately.

In the absence of non-price negotiation parameters, FinanceCo has used alternative approaches for purchasing a “basket” of products. Instead of purchasing a large lot of identical products, FinanceCo was able to purchase products of different quality or performance separately. The breaking up of large purchase lots into several smaller ones meant that the smaller lots could either be sourced from the same supplier, or from multiple suppliers. This represented an opportunity that was not exploited before the implementation of e-RAs as the search costs involved in sourcing various components individually often outweigh the cost of purchasing a bundled product.

In terms of aggregating purchase volume, e-RAs enabled FinanceCo to purchase in larger lots at some occasions by combining its purchase with other arms of its parent business. For example, in the e-RA for hotel accommodation, FinanceCo had aggregated its purchases with other business divisions of its parent company. By combining their purchases, they took advantage of economies of scale and achieving critical mass for less important purchases. From a supplier’s perspective, selling to FinanceCo via e-RAs represents an opportunity for the supplier to supply different components of a larger product, and where possible, supply a fully-packaged product.

The observation regarding the change of behaviour in FinanceCo’s purchasing indicate the possibility in optimizing its procurement. Apart from increasing the competition amongst suppliers that could lead to lower purchase prices, FinanceCo gained a better understanding of its purchases, enabling it to optimize purchasing decisions to take advantage of individual supplier’s capabilities. The common rule of thumb for organizations sourcing through e-RAs is to purchase from the lowest-priced suppliers. However this poses a new challenge for FinanceCo in the determination of “value for money” of purchases. The absence of non-price negotiation parameters could make suppliers market their products opportunistically. For example, products that require after-sales support may be marketed with a low initial purchase price, but the cost of subsequent after-sales support would be priced higher to counter the initial low purchase price. While such practices are despised, the buyer has to understand “you get what you paid for” and e-RAs are principally a more effective mechanism for determining prices, and possibly the allocation of resources. Buyers will also need to take into account the Total Cost of Ownership of a product as the initial purchase price could only be the tip of the iceberg. This issue creates complications for the sourcing of indirect supplies, whereby repair, maintenance, upgrading and disposal of equipment incur significant costs. For commodity-like direct supplies, the Total Cost of Ownership could be less of a worry, but the quality, delivery and settlement flexibility should be taken into account in the purchase price. Additionally, the value of collaboration between suppliers and the buyer in product research and design could be overlooked in e-RA transactions. Flexibility in delivery, inventory management and settlement were important reasons why organizations adopted Supply Chain Management, and organizations sourcing through e-RAs need to consider the implications from the loss of such collaboration. Additionally, the intangible attributes of the product, unique capabilities of the suppliers and process improvement (e.g. Just In Time manufacturing) cannot be expressed in terms of prices, nor can they be assumed to be the same. Thus, e-RAs present a significant challenge for buyers and sellers in pricing intangible attributes of products, and the attributes of the suppliers.

4.2 The Timing of Electronic Reverse Auctions

In determining whether to source supplies through e-RAs, FinanceCo first evaluated various attributes of the product involved. A major consideration was given to the number of suppliers for the product, and their tendency to bid for the contracts competitively. If a product is only sold by one or two suppliers, FinanceCo would decide against sourcing it through e-RAs. When there is a small pool of suppliers, the suppliers tend to know each others' operations and cost structure well, and will only be willing to match their competitors' bids. Under such circumstances, the e-RAs business model will not deliver substantial benefits to the buyer in terms of price reduction. Similarly, if a product is sold by many suppliers, but none has spare capacity to satisfy the volume required by FinanceCo, then e-RAs will not generate significant competition.

A strategy that FinanceCo has applied to raise the interest of suppliers to place competitive bids and thereby increase competition in the market is through aggregating the purchases of all its branches, and at times, its sister companies. At the same time, FinanceCo evaluated the market for a particular product, determining periods of excess capacity. After analysing the purchasing patterns of other organizations, FinanceCo scheduled its e-RA events before other organizations purchase, ensuring that potential suppliers have not made substantial commitment to other customers. By coordinating its purchasing timing to pre-empt other organizations, FinanceCo was able to get the best participation rate and possibly the best outcome from its e-RA events. Also, suppliers who wish to secure future business when their existing contracts terminate would be able to participate in e-RAs without being caught in a capacity shortfall. This two-pronged approach in enlarging a purchase order, and choosing a period of excess supplier capacity enabled FinanceCo to maximize competition among potential suppliers.

However, FinanceCo was aware that e-RAs should not disadvantage suppliers to the extent that healthy competition is diminished, especially during periods of economic downturn. Reliable supplies require profitable suppliers in the long term. Thus, FinanceCo treads a fine line in increasing the competitiveness of its suppliers, while not driving the suppliers to oblivion. FinanceCo also constantly searches for new suppliers that have the expertise and capacity to satisfy its needs.

4.3 Education and Awareness

e-RAs introduce the notion of the shift from place to space. It enables suppliers to bid for the tenders remotely through the Internet instead of physically attending RA events. While such practices have been common in seller-hosted forward auctions, it is not often that suppliers have to bid against their competitors in a live environment to win the privilege of selling their

products. To prevent suppliers from colluding, yet to ensure that suppliers do not view e-RAs simply as a mechanism to obtain price quotations, the host of e-RAs must adhere to mutually agreed terms and conditions, and provide some level of transparency. As observed in all of the six e-RA events, suppliers' pricing strategies were reactionary. They were not willing to be the price-leader. Rather, suppliers were keen only to match the prices of the price leader. However, the way that e-RAs were designed ensures that they deliver most benefits to the lowest price bidder. To further enhance incentives for suppliers to participate in e-RAs, the e-RA sponsors (either the buyer, or the buyer's representative) have to educate potential suppliers. This is to increase awareness of participating bidders about their obligations and rights, as well as about acceptable practices by the buyer and sellers.

To ensure that suppliers do not experience technical difficulties or have inadequate infrastructure for participating in the e-RAs, FinanceCo organized a trial run for the auction on the day before the actual auction. However, to distinguish the trial run from the real auction, FinanceCo reminded the bidders not to place bids based on their true pricing strategies. The purpose of the trial auction was to provide bidders with a "simulated" experience, and to iron out potential misunderstandings of the e-RA process. FinanceCo also ensured suppliers that it did not embark on e-RAs purely for the purpose of price discovery, but that it was serious about switching suppliers.

The training and education of bidders raise their awareness of the binding nature of e-RAs. They learn that although e-RAs facilitate price determination, bids placed are not retractable. Therefore bidders will need to have a clear knowledge of their own cost structure before the e-RA to ensure that the bids they place are achievable and realistic. In addition, the training and education exercises also reduce the anxiety and emotional experiences bidders may face in e-RAs. Bidders are encouraged to place bids rationally, and not be affected by a spur of the moment emotion, or be intimidated by competitors' bids. The training and education efforts also ensure a consistent familiarity of participants with the auction process.

The above are observations that were picked up over several e-RA events. The importance of some of these issues may change depending on the e-RA event. Nevertheless, the host /sponsor of e-RAs has to consider all possible eventualities, and come up with practical and equitable solutions.

5. IMPLICATIONS FOR RESEARCH AND PRACTICE

The present study highlighted several key issues that are emerging in e-RAs. A major challenge for buyers in deciding whether to implement e-RAs in sourcing and

procurement would be the ability to pre-determine the negotiating parameters, enabling price to be the sole negotiation parameter. But often, this is not the case; if the buyer continues with e-RAs, then a set of different pricing and costing methodology is required. The pricing and costing methodology will have to take into account the Total Cost of Ownership, as well as the ability to separate complex pricing strategies into their individual components. While this may appear as an attempt to commoditize non-commodity supplies, organizations that pursue the outsourcing approach are facing similar challenges to individually price components of a complex bundle of products. Multiple-attribute e-RAs [18] that take into account the various attributes of a product auctioneered could overcome some of the challenges of a price-based e-RA. The different attributes are assigned different weightings, and a scoring system that calculates the total "worth" or "value" of a product could substitute the use of price as the negotiating parameter, i.e. develop a negotiating parameter that represents the attributes of a product better than price.

The second issue is the ability for e-RAs to produce "Win-Win-Win" situations, that is, to reward more than just the buyer and the winning supplier. Efforts to reward non-winning bidders will encourage their future participation. Non-winning bidders should be made to appreciate that by participating in e-RAs, they gain access to market price and competitors' information. A possible solution to this problem is a multiple-sourcing e-RA model. Instead of awarding the whole auction lot to the winning supplier, the buyer may find that a 70/30 or 60/40 split between the winning bidder and the second lowest bidder could provide additional motivation for suppliers to participate in e-RAs, as well as encouraging suppliers to bid competitively. Attempts to source supplies through variable lotting strategies indicate efforts by the buyer to spread its purchase among several suppliers.

Finally, organizations need to recognize the role of e-RAs in procurement and sourcing in price-determination and supplier selection. Supplier selection is a process that is not totally influenced by a product's price. In e-RAs, the pre-auction qualification process represents initial supplier selection whereby the unreliable suppliers are weeded out, and capabilities of suppliers verified. Organizations also need to recognize the variance among the different types of procurement they undertake. Direct and indirect supplies require different procurement strategies. In preparing for an e-RA, the buyer should consider whether it would be willing to place competitive bids if it were placed in the position of a supplier.

6. CONCLUSION

This paper summarizes key observations from a case study of e-RAs. Using empirical data collected from

stakeholders involved in e-RAs, this paper provides insight into the emerging issues in e-RAs and suggests possible explanations for describing the observations made. While not attempting to generalize the observations, the explanations provide cues for developing strategies for overcoming specific challenges that arise from e-RA implementation.

The study's findings contribute to practice particularly in the determination of e-RA negotiation parameters. Current practice to use price as the sole negotiation parameter introduces substantial limitations for e-RAs. A multi-attribute weighted scoring system could provide a more complete and definitive indicator of a product's attributes and properties, and hence could be the basis of a single and more holistic negotiation parameter.

A major limitation of the present study is that the e-RA events involved the sourcing of indirect supplies. Direct supplies are more critical to an organization's operations, and the applicability and effectiveness of e-RAs may be limited as incumbent suppliers could have more control over the buyer-supplier relationship, preventing the buyer from switching suppliers without incurring significant costs and risks.

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