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Internet Enabled Reverse Auctions: A Literature Synthesis

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ABSTRACT

Internet enabled Reverse Auctions (RAs) have been in use for more than a decade. RAs were primarily employed by firms as cost saving measure, but they are now increasingly being used to explore and expand their supply base. The use of RAs is hence multi-faceted and has evolved over years. This evolution has hence attracted wide attention from the research community. Many aspects of RAs including the auction format, visibility type, strategic implications of RAs on buyer-supplier relationship etc., have been well scrutinized. In this paper we put forward a framework which categorizes the empirical findings according to the chain of inherent processes involved in the implementation and conduction the RAs. This framework will assist researchers not only to categorize and map their findings to a proper methodical base, but also it will help them identify the gaps in the current theoretical understanding of RAs.

Keywords

Reverse Auctions, Auction format, Visibility type, Buyer-supplier relationship.

INTRODUCTION

Reverse auctions have existed for decades, however the use of internet enabled RAs to procure products and services emerged in mid 1990s. When a firm decides to buy products/services from the market, it invites potential suppliers to quote their price. Then these suppliers are invited to an auction event where they bid their prices down in order to win the buyer's business. As opposed to forward auctions where bidders increase the price to buy, suppliers here reduce the price to sell, hence the term 'reverse' was associated with such type of auctions and they were named reverse auctions.

The extant literature has widely debated the advantages of RAs and has also issued caveats for their applicability. It has improved our empirical understanding of reverse auctions and emerging trends in the use of RAs. It includes empirical and conceptual studies to improve the understanding of the phenomena of RAs, and mathematical studies to help improve the process and decision making with respect to RAs. In this paper, we focus on the empirical literature and study how it has matured over the years. We found significant developments and in some cases, contrasts in the understanding of RAs, their outcomes, their effect on the buyer-supplier relationships and other consequences. Figure 1, represents the overview of reverse auctions. We address each section as shown in the figure.

OVERVIEW OF REVERSE AUCTIONS

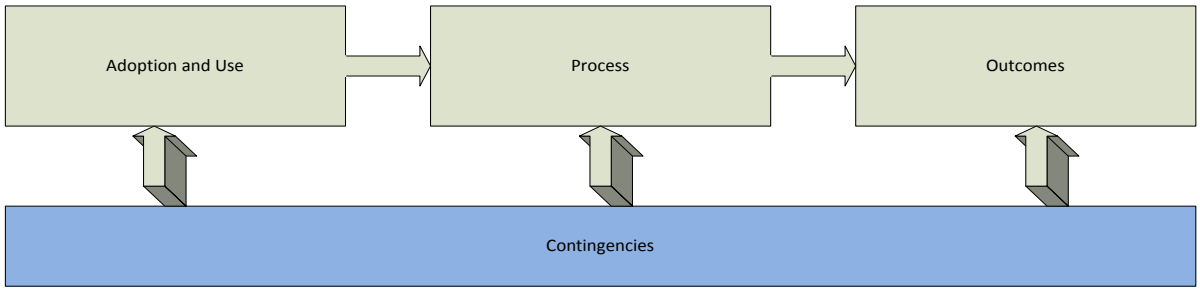

Figure 1. Overview of Reverse Auctions

ADOPTION AND USE OF RAS

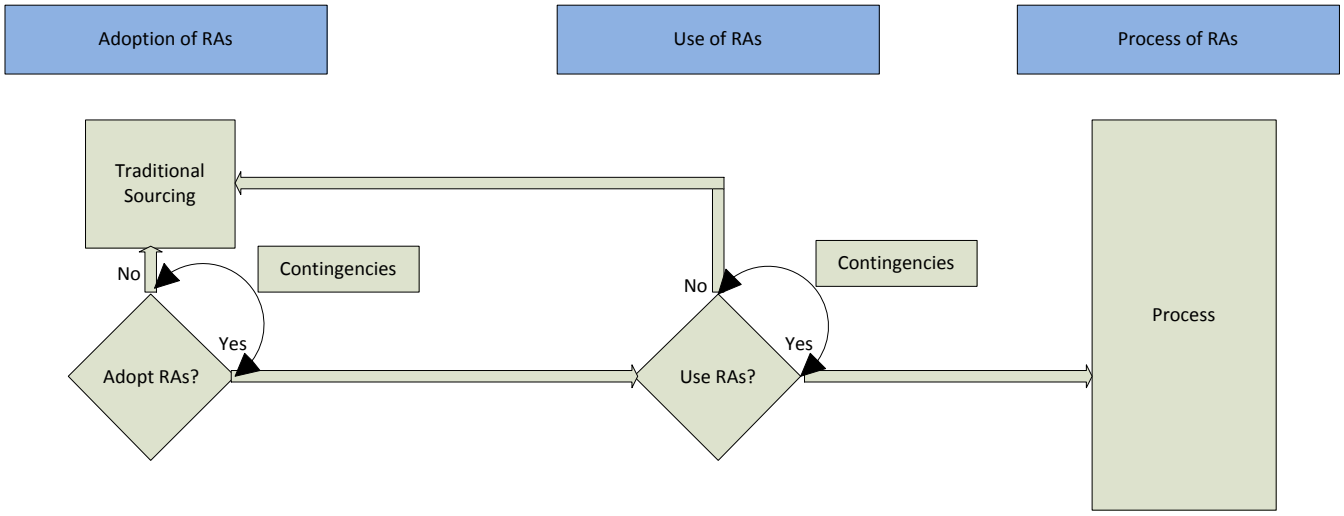

Figure 2. Adoption and use of RAs

The decision to use or participate in reverse auctions have been explored from both buyers' and suppliers' perspective. The commoditization and standardization of products and services has increased the incentive for purchasing firms to indulge in RAs (Jap 2002; Jap and Mohr 2002). Buyers find RAs attractive because of the opportunities they get to reach out to alternative suppliers and distant markets, help them expand their supply base (Jap 2002). For every $1 saved through procurement can result in $5 of added revenue (Jap 2002). Similarly suppliers get the opportunity to attract new customers, utilize spare capacity (Jap 2002; Hartley, Lane et al. 2004), and bid on more events (Jap 2002). The reduced procurement cycle helps suppliers reduce their reliance on market forecasts and plan their stock of inventory. Suppliers can gain better knowledge of buyers' financial goals and obtain market information to gauge their pricing (Hartley, Lane et al. 2004).

In addition to the difference in perceptions of adopters and non-adopters of RAs, the factors leading to the decision whether or not use RAs have also been explored. Adopters of RAs enjoy higher annual sales than non-adopters (Hartley, Lane et al. 2004) which can give them a strategic advantage over their competition. It has been found that larger firms have higher level of adoption of RAs than smaller firms (Hartley, Lane et al. 2004; Teo, Lin et al. 2009). This difference can be attributed to the available expertise to facilitate auctions and ability to standardize the products and advantage of larger volume of products procured through auctions (Hartley, Lane et al. 2004). The larger firms also have a greater need to maintain their lead in technological advancements over their smaller counterparts which motivates their early adoption of RAs (Teo, Lin et al. 2009). Other factors that have been found to influence the adoption of RAs are top management support, business partner influence and perceived indirect benefits (Teo, Lin et al. 2009).

Once a buyer makes the strategic decision to use RAs (Figure 2), it needs to decide the products and services it would procure using RAs as a medium. The product characteristics play a major role in the decision to use RAs. Commodities and standardized products are more likely to be procured through RAs (Jap 2002).

A buyer is unlikely to use RAs when he requires his suppliers to be willing to conform to the change in specifications of the products (Mithas, Jones et al. 2008). It is because such requirements cannot be successfully captured through auctions and bidding in such auctions can be highly random and vague. Mithas, Jones et al. 2008 define them as non-contractible features of the relationship which prevent the buyer from using RAs. Their findings also suggest that product specialization negatively influences the use of RAs. Asset specificity however, has not been found to impact the use of RAs (Mithas, Jones et al. 2008). It is because even if a buyer requires large investments from the supplier(s), these investments can be considered to be onetime investments that the supplier(s) should be willing to make in order to win the business.

PROCESS OF RAS

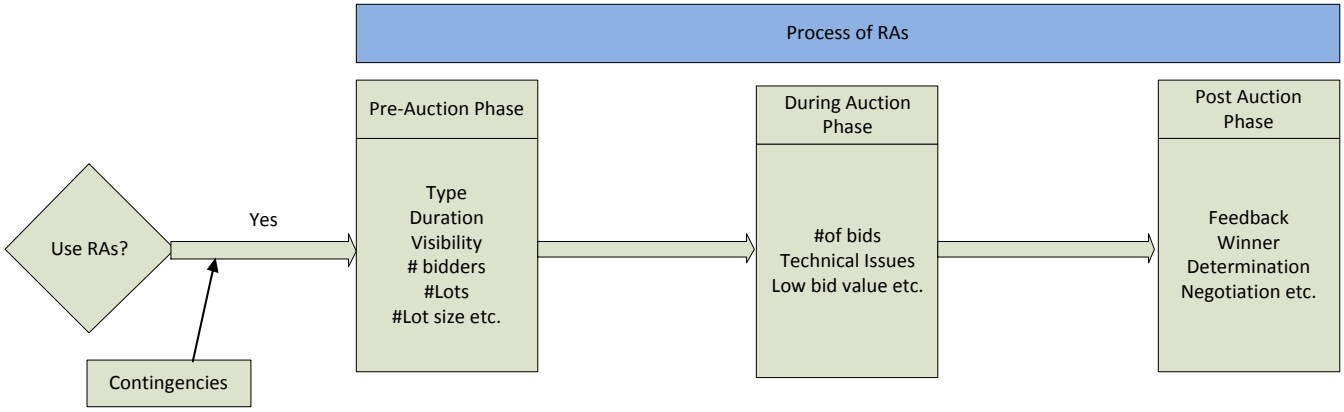

Figure 3. Process of RAs

The key contingencies and conditions necessary for successful conduction of auctions have been greatly emphasized in the literature. The purchasing firm should ensure that its purchase is large enough to be conducted through RAs (Smeltzer and Carr 2003). This is particularly important because the use of RAs cost resources, time and sufficient skilled manpower. The costs saving benefits of large purchases outweigh the expenses incurred to conduct RAs. Then the firm needs to make sure it has necessary infrastructure to support RAs. The infrastructure includes availability of skilled personnel who manage RAs, monetary resources and technical tools and expertise required to conduct RAs. The firm then should ensure that the market conditions are appropriate for RA use (Smeltzer and Carr 2003). The market conditions are most appropriate when there are enough suppliers looking for business or the supply base has spare capacity (Jap 2002; Hartley, Lane et al. 2004) to have the incentive to compete. One of the primary conditions for success of RAs is that the specifications of the product be correctly specified (Smeltzer and Carr 2003).Without clear and comprehensive specifications the suppliers can make their own assumptions when bidding in the auctions resulting in vague bids.

The design and structure of auctions are referred to as "parameters" of auctions (Mithas and Jones 2007). The parameters of auctions (Figure 3) include duration of auctions, visibility of bids, type of auction (Dutch, English, Japanese), closing of auction (hard vs close), reserve price, number of bidders, number of bids, number of lots, size of lots, minimum decrement and auction rules.

Duration of auctions: There has not been sufficient evidence to prove the impact of duration of auctions on the buyer surplus (Mithas and Jones 2007).

Visibility of bids: There is sufficient empirical evidence to prove that the lack of visibility positively impacts buyer surplus and is looked upon favorably as compared to visible bid auctions (Jap 2002; Jap 2003; Jap 2007; Mithas and Jones 2007). Open bid auctions reveal the pricing information of a supplier to its competitors and hence are perceived by suppliers as an opportunistic move by a buyer (Jap 2002). The non-contractual and intangible attributes of the suppliers' bid do not get represented in open bid auctions (Jap 2002). The suppliers perceive open bid auctions as buyers' intension to survey the market without any intention to award the business (Jap 2003). Such negative perceptions about open bid auctions are detrimental to the buyer-supplier relationship. It is because such perceptions determine suppliers' future actions and response to subsequent circumstances (Jap 2002). It is hence suggested that closed-bid or rank only auctions be used (Jap 2002; Jap 2003; Jap 2007). There is hence sufficient empirical evidence that suggest that rank only auctions positively affect the buyer surplus (Mithas and Jones 2007).

Closing of auction: The closing of an auction also impacts the outcome of an auction. Soft close of an auction where the duration of the auction gets extended if an additional bid is placed at the last minute favorably impacts the buyer surplus (Jap 2002).

Reserve Price: The empirical evidence supports the positive relationship between the use of reserve price and the buyer surplus (Mithas and Jones 2007).

Number of bidders: The empirical findings on the impact of number of bidders in an auction contradict. Mithas and Jones (2007) found no empirical evidence which could suggest buyer surplus because of the increase in the number of bidders. However, Jap (2007) suggests a positive impact on the suppliers' satisfaction. It is to be noted that fewer number of bidders in an auction negatively impacts suppliers satisfaction (Jap 2007). The dissatisfaction with RAs leads to suppliers suspicion of opportunism (Jap 2002) and hence it can be concluded that this suspicion of opportunism negatively impacts (Jap 2002) buyer surplus (Mithas and Jones 2007).

Number of bids: The number of bids placed in an auction is positively related to the buyer surplus. The empirical evidence supports the notion that there is decrease in the price with the increase in the number of bids placed (Jap 2002; Jap 2007; Mithas and Jones 2007)

Number of lots: With the increase in number of lots, there is an increase in interdependence of lots and ambiguity regarding winner selection. Suppliers find it difficult to bid in subsequent lots and gauge their standing in the auctions (Jap 2002).. The increase in number of lots negatively impacts buyer surplus.

Once the auction event is over, the participating suppliers need proper feedback on their performance and why or why not they are being awarded the business (Giampetro and Emiliani 2007). Not providing feedback increases suppliers' suspicion of buyer's opportunistic behavior and may deter them from further participation in RAs (Carter and Kaufmann 2007).

Outcomes of RAs

The outcomes of RAs depend on various factors which include, the type of product or service being auctioned, the market conditions, the type of industry in which the auctions are being held e.g., manufacturing, health care, real estate etc. The outcomes of RAs are hence contingent on multiple factors such as the number of bidders, the number of bids placed, the visibility type, the chosen format of the auction, the number and the size of the lots etc. The use of RAs generally hurt the relationship with suppliers and the relationship is more seen as arms' length rather than strategic (Jap 2007). At the same time, RAs help firms cut costs to maintain their profitability in the market (Jap 2002; Jap 2003).

Conclusion

We presented an overview of the literature on reverse auctions in the paper. We categorized the empirical findings according to the chain of inherent processes in reverse auctions. We discussed the adoption and the process of reverse auctions and concluded with a brief discussion on outcomes. We discussed the contingencies for each section.

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