Why Small Suppliers Continue to Participate in Electronic Reverse Auctions? – Integration of Economic and Social Values

Introduction

Use of electronic reverse auctions (ERAs) has become quite popular among big companies in their procurement of the items for maintenance, repair, and operations (MRO) for their everyday business activities. Many of the conglomerates in Korea such as Samsung and LG have established their own MRO companies or rely on the services provided by MRO companies owned by other conglomerates. These MRO companies are intermediaries who get involved in selecting qualified suppliers to be invited and managing the online reverse auction process. The main motivation behind widespread adoption of ERA for MRO items by big buying firms is reduction of purchase cost through increased competition among qualified suppliers. Expectedly, this intensified competition on the other hand is the very reason why suppliers perceive themselves to be put in disadvantage and decide not to participate in the ERA or get in the trap of steep competition. Further, suppliers view ERAs as a tool to increase buyer opportunism and damage buyer-supplier relationship (Emiliani and Stec 2005). Even when they decide to participate, this is likely to be due to coercion exercised by powerful buyers (Emiliani and Stec 2004).

Despite the negative concerns that ERAs are inherently coercive and unfair to suppliers, many of suppliers continue to participate in ERAs hosted by the MRO intermediaries serving as agents for relatively large buying firms. This has been evidenced by strong growth of Korean MRO intermediaries in recent years. It is well known that a critical factor to the success of the intermediaries is to secure active and committed participation of qualified suppliers in ERAs. It is especially important to understand why small suppliers continue to participate because many of the MRO markets are fragmented and thus the suppliers tend to be small. Further, it is socially desirable to find qualified small suppliers and offer them a chance to grow and prosper.

The main question of this study is to empirically understand the reason for continued participation of small suppliers. This in fact has been a subject of debate in academics (Schoenherr and Mabert 2007) but the relevant literature fails to provide empirical evidence. According to the literature, the main benefits of ERAs for suppliers include an opportunity for new business, improved efficiency in terms of cycle time between bidding and awarding of business, and reduction in inventory levels due to shorter time between the bid and the actual sales and delivery (Caniels and van Raaij 2009). In addition to these economic benefits, the literature also suggest that ERAs can be socially beneficial as well. For instance, openness and transparency of reverse auctions can make them more relationship friendly and fair for the disadvantaged suppliers (Daly and Nath 2005). When designed properly, ERAs can be an objective and fair way of bidding than the traditional methods (Smeltzer and Carr 2003;

Caniels and van Raaij 2009). Our study is the first to our knowledge that offers a systematic analysis of economic and social factors.

Research model

We view the continued participation of suppliers in ERAs as economic and social behaviors. The basic premise of our study is that small suppliers' intention for continued participation in ERAs depends on their cost/benefit analysis from both economic and social standpoints. This is close to the conceptual framework of Gassenheimer, Houston, and Davis (1998) discussing how economic and social values are related to fairness perception in interorganizational relationship retention decisions. We borrow organizational justice theory to provide logical link between perceived benefits and risks associated with ERAs and perceived justice of ERAs and to further show that perceived justice leads to continued participation. Justice theory postulates that fair treatment is a major determinant of positive attitude and behaviors and creates stable social structures (Konovsky 2000). Interorganizational studies have consistently shown that justice positively affect social outcomes such as relationship quality, trust, commitment, and expectation of continuity (Kashyap et al. 2008; Kumar et al. 1995). In our study context, fairness of the intermediary is expected to result in formation of positive attitude toward the intermediary in charge of ERA execution.

We propose that supplier perception on benefits and costs from ERA participation has significant impact on their perception on justice of the intermediary hosting the ERA. We focus on *improved efficiency* in bidding and supply and *increased competition* among participating suppliers as the major benefit and cost factors. We also include in our research model *enhanced transparency* as the third factor, representing openness, objectivity, and fairness of the bidding execution process. These three factors are cited as the major reasons why suppliers are motivated to participate in ERAs despite their inherent bias against suppliers (Caniels and va Raaij 2009; Smeltzer and Carr 2003). The literature distinguishes between the two components of justice: distributive justice and procedural justice. Distributive justice is the perceived fairness of a decision outcome while procedural justice is the perceived fairness of the process associated with the distribution of the outcome.

First, we empirically test whether these three factors have direct impact on supplier intention to continue to participate in ERAs. Although these factors have been cited as main reasons for supplier participation, the literature reports little empirical evidence for this. This has not been empirically validated yet although this hypothesis of the direction relationship appears to be quite plausible.

Second, we examine the relationship between these three factors and justice perception. We argue that both improved efficiency and increased competition affect distributive justice, but in opposite directions. The 'equity principle' of distributive justice indicates that outcomes should reflect inputs. Improved efficiency in bidding implies that suppliers can achieve greater economic gains for the same amount of efforts. By the same token, suppliers may

become less profitable in the face of steeper competition. Therefore, efficiency is expected to have positive impact on distributive justice of the intermediary hosting ERAs while competition is negatively related to the distributive justice. Unlike the first two, the third one, enhanced transparency, affects procedural justice for rather obvious reasons. When ERAs are conducted with clear rules in an objective manner, participants will perceive that procedural justice is secured. Transparency ensures procedural justice but does not provide even the slightest hint regarding equity or equality of auction outcomes. Instead, we suggest that procedural justice induced by transparency strengthens the perception of distributive justice. This means when suppliers perceive ERAs procedurally fair, then they are likely to perceive the auction outcome to be fair as well. In their study of ERAs, van Raaij and Caniels (2009) report that procedural and distributive justice positively influence supplier satisfaction with ERAs. Although the relationship between the two types of justice is not well established, Swygert and Yanes (1998), in their extensive review of legal contexts, suggest that perception of procedural justice enhance perceptions of distributive justice for the participant in the decision-making process.

We also use social exchange theory (SET) to capture the relational features embedded in the mechanism of ERAs and exchange interactions among suppliers, buyers and intermediaries linking between the two. SET postulates that exchange interactions in social relationships lead to economic and social outcomes and that if rewards exceed expectations, a partner will show positive attitudinal and behavioral responses (Griffith et al. 2006). When the belief is formed over time that exchange mechanisms are fair, the exchange relationship will naturally develop trust which is a critical component of relationship sustainability. Similar to a few recent studies have integrated justice theory and SET in the related area of supply chain management (Griffith et al. 2006) and logistics (Hofer et al. 2012), our study posit that enhanced perception on distributive and procedural justice will lead to greater trust which in turn make suppliers more willing to continue the relationship with the intermediary.

Analysis and discussion

To empirically test the validity of our conceptual model, we administered survey questionnaires distributed to the 1,300 suppliers who are preselected into a list as qualified suppliers by a MRO intermediary in Korea. These suppliers get invited to participate at ERAs hosted by the MRO intermediary as needed. Among the 1,300 suppliers contacted, 216 returned the questionnaire. After discarding incomplete ones and excluding suppliers employing over 500 employees, we used 171 responses for statistical analysis. We adopted measurement items for all the constructs used in the model from the literature and made sure that there were no problem with validity of the constructs. We decided to use PLS as structural equation modeling (SEM) because we wanted to have a sufficient number of sample data points for the size of the research model.

The PLS results offers a few interesting results. First, efficiency and competition do not directly influence continued participation. On the contrary, the literature consistently suggests that efficiency and competition are mentioned as facilitating and inhibiting factors for supplier participation in ERAs. Instead, our PLS results show that their indirect impact on the supplier's continuance intention through their influence on distributive justice and trust is quite strong. As we expected, efficiency enhances supplier perception on distributive justice of the intermediary because transactional efficiency in terms of speed and process improvements increases the output-to-input ratio of bidding transactions. In a similar way, increased competition negatively influences distributive justice because suppliers win less frequently and their margin decreases. Second, unlike the first two, transparency only directly affect the participation intention but also indirectly through its influence on justice and trust. Transparency refers to the extent to which transactional processes are open and executed according to the pre-specified rules. Therefore, transparency enhances supplier perception of procedural justice of the intermediary. Third, the impact of procedural and distributive justice on the dependent variable is fully mediated by trust which then influences the continuance intention. We did not test alternative partial mediation models, but what is certain is that justice has strong impact on the intention.

Conclusion

In sum, we argue that small suppliers continue their relationship with the MRO intermediaries not based on simple economic calculation of costs and benefits but on the basis of long-term oriented values such as fairness and trustworthiness of the intermediaries. The supplier perception of justice of the MRO intermediary plays a central role in determining continuance intention of small suppliers. Improved efficiency and increased competition does not influence the intention directly, but indirectly through distributive justice. Overall, our results suggest that social elements of the supplier and intermediary relationship, such as supplier perception of justice and trust on the intermediary, are critical to continued participation. Continued participation of the qualified suppliers are of strategic importance because the success of ERAs and any online marketplace largely depends on securing a sufficient number of qualified suppliers.

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