

The use of bundling in B2B online reverse auctions

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Abstract

In industrial purchasing a request for quotation (RFQ) can consist of a single item, but is most often composed of two or more products and/or services bundled together. While such bundles are used in offline purchase negotiations, their criticality is heightened in online auctions due to their usual short duration and constrained bidding environment. Despite this importance, little systematic discussion or evaluation has taken place concerning bundling practice, especially as it relates to the individual items included in the bundle, the overall bundle composition, and the resulting supply base and ultimate bundle performance. This study investigates these issues by developing a conceptual model and testing it with a large-scale survey completed by purchasing professionals practicing bundling in B2B online auctions. Results indicate that crafting a more homogeneous bundle is most important in achieving a successful outcome. Furthermore, more complex or difficult-to-specify items do not impact perceived bundle performance, but do influence the supply base that is willing and able to bid on the business.

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1. Introduction

One of the more important components of the request for quote (RFQ) process is the determination of the appropriate order lot (bundle) that a supplier evaluates and quotes upon. The RFQ order lot may consist of a single item, but will more often be comprised of a set or bundle of different items that is attractive to one or more potential bidders. Within this context, bundling (a.k.a., aggregating, lotting and combining) is defined as *the aggregation of two or*

more items (products and/or services) by the buyer into a bundle that is put up for bid to potential suppliers as part of a single RFQ. As such, the composition/configuration of a bundle determines the value of the transaction and the competitive interest between buyers and suppliers, ultimately influencing purchasing performance (Mabert and Schoenherr, 2001).

While bundling has received some academic attention on the sell-side of the supply chain (e.g., Stremersch and Tellis, 2002), few studies on the buy-side have investigated bundling approaches and associated issues. Moreover, while purchasing managers and buyers have performed bundling for centuries, little systematic evaluation has taken place concerning how to guide this important decision, or what variables may come into play and ultimately impact purchase performance. This is surprising, since bundling can be an important element in

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the general procurement and RFQ development process (Schoenherr and Mabert, 2003, 2006).

Furthermore, while bundling is often employed in offline purchase negotiations, its criticality is heightened in online bidding events (e.g., Beall et al., 2003; Jap, 2002; Smeltzer and Carr, 2003) due to their usual short duration and constrained environment. Often called reverse auctions, online bidding events are real-time dynamic auctions between a buyer and several suppliers, who compete against each other online, lowering their bid amounts (Beall et al., 2003), until the lowest competitive market price is reached. The constrained environment is created by the fact that once the auction has started, there is usually no possibility for the buyer to modify the bundle, or for the supplier to obtain more information on the quoted items. In contrast, the offline setting provides much more flexibility, and RFQs can easily be modified, even once they have been sent out, to accommodate issues previously neglected or not considered (e.g., clarifications on specifications, supplier suggestions to alter the bundle in order for them to provide a much more competitive quote). This decreased significance may be the reason why bundling has received so little attention in purchasing research in the past. For online bidding events, however, which emerged in the mid-1990s as a new way of doing procurement, all potential concerns must be addressed beforehand due to the inability to modify the bundle configuration during these auctions. If a bundle is not configured correctly, it can lead to a disappointing outcome. This was illustrated in a case study by Mabert and Schoenherr (2001), who present and discuss online auction experiences by a manufacturer of engineered products for the transportation industry. The case study company aggregated 1500 items into 140 bundles for an online bidding event. Although 80% of the bundles got three to four bids on average from interested suppliers, and seven to eight bids on items with a high annual demand and dollar volume, the remaining 20% received unexpectedly either only one or no bid at all. This was a disturbing outcome, since the company is otherwise recognized to be one of the most proactive and advanced firms in regard to sourcing practices. It also illustrated that bundle configuration is a crucial element for success in these settings.

Despite this significance, research in the area has been sparse. This paper presents the first focused investigation of bundling for business-to-business (B2B) online reverse auctions. Specifically, this research looks at bundle performance in reverse auctions, i.e. the satisfaction and perceived success of

the buyer with the bundle, and identifies performance determinants. These include item specification difficulty, i.e. how challenging it is to specify the items for the bundle, and overall bundle complexity, i.e. the degree of homogeneity or similarity of individual items in the bundle. Moreover, the study identifies how these aspects influence the resulting supply base, i.e. the number of suppliers that are able and willing to bid on the business. In addition, the criticality of this resulting supply base on bundle performance is assessed. To study these issues, a survey of US manufacturing firms using bundles in reverse auctions was conducted. Results, as presented below, provide important practical guidance for operations and supply managers to craft the most appropriate and successful bundle.

The paper proceeds as follows. Section 2 reviews relevant literature and outlines the theoretical foundation of this study. In Section 3, the hypotheses are developed and grounded in prior research. Section 4 provides the measure development, information about how the survey was conducted, and a description of the resulting sample. Section 5 tests the model and associated hypotheses with structural equation modeling. Section 6 provides a discussion of the results with detailed managerial implications. Section 7 concludes and outlines avenues for future research.

2. Literature review

Several disciplines, most notably economics and marketing, have dealt with the issue of bundling. However, most of these past studies dealt with bundling in a business-to-consumer (B2C) environment, which is fundamentally different from bundling in a B2B setting (e.g., Cooke, 1986; Rozin, 2004). Industrial markets are generally more complex, the purchases are more significant, and the whole purchasing process is more elaborate requiring a more careful assessment. In addition, in B2C environments the bundle is generally built by the seller, whereas, in the B2B context considered in this study the bundle is created (specified) by the buyer. Similarly, in the former setting the bundle is offered to the consumer, whereas, in the latter the bundle is put up for bid to the supplier.

The following illustrates different bundling examples. In a B2C context, consumer electronic retailers like Best Buy and Circuit City offer personal computer packages that include the computer bundled with keyboard, mouse, monitor and software, and provide special pricing if a printer or a router is purchased in the same transaction. The computer can represent a bundle in itself, consisting of processor, hard drive, CD-RW

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