

Management Insights

Outsourcing Manufacturing: Secure Price-Masking Mechanisms for Purchasing Component Parts

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As manufacturers outsource their manufacturing operations to contract manufacturers, a manufacturer may purchase the components directly from the supplier to obtain a lower price and then ship these components to the contract manufacturer for the assembly process. However, to improve supply chain efficiency, it is rather common for a manufacturer to delegate its component purchasing to its contract manufacturer. Consequently, component suppliers sell their parts to both manufacturers and the contract manufacturers. Because the selling price to each party depends on various factors (volume, long-term contracts, etc.), the supplier may offer different selling prices to different parties. However, once these parties share the supplier's price information, every party will negotiate with the supplier to get the lower price. Atallah et al. develop a mechanism that preserves the private information of all participants. Preserving private information is becoming an important issue especially when a contract manufacturer is using the same component to produce different products for different manufacturers. The authors develop and test a business process that enables a manufacturer to make the following decisions: (a) contract manufacturer selection: select which of the N competing contract manufacturers will win the contract to assemble the products; and (b) component selection: select which of the requisite components to be procured by the manufacturer (and the rest to be purchased by the selected contract manufacturer(s)). The business process is modeled as an auction in which each contract manufacturer submits an "encrypted" bid for each component. By showing that simple adaptations of a secure Vickrey auction are not incentive compatible, the authors develop an incentive-compatible auction. In addition, the authors develop a "secure price-masking" mechanism that preserves private information of the selling price of the components.

Group Buying of Competing Retailers

Rachel R. Chen and Paolo Roma

Under group buying, quantity discounts are offered based on the buyers' aggregated purchasing quantity,

instead of individual quantities. As the price decreases with the total quantity, buyers receive lower prices than they would otherwise be able to get individually. In practice, retailers often face the opportunity of group purchase. Despite lower wholesale prices and enhanced purchasing power, retailers may not always benefit from pooling their purchasing power, especially when they are competing with each other. In this paper, the authors show that for two retailers who differ in market base or operational efficiency, joint purchasing is always beneficial for the smaller (or less efficient) retailer, whereas it can be detrimental for the larger (or more efficient) one if the two retailers are quite different. Nevertheless, group buying is always beneficial to both retailers when they are similar, and when they are competitive in different dimensions.

Push or Pull? Auctioning Supply Contracts

Cuihong Li and Alan Scheller-Wolf

Despite the fact that in many of the purchasing settings, the buyer is concerned with both price and non-price attributes, the vast majority of today's B2B auctions are conducted with a price-only format. Questioning the conventional wisdom that more competition is better for the buyer, Li and Scheller-Wolf conduct a theoretical analysis of price-only online auctions where the buyer faces uncertain demand and the selected (winning) supplier must build capacity before demand is realized. Based on the capacity built by the winning supplier and the subsequent demand realization, the buyer may face an excess or shortage of supply. The authors consider two types of contracts that vary in the way the capacity risk is allocated between the buyer and supplier. Under a push contract, the buyer specifies the purchasing quantity before the demand is known, leaving the buyer to bear the inventory risk. Under a pull contract, the buyer does not specify the order quantity until after the demand is realized; leaving the supplier to bear the capacity risk, as he has to invest in capacity without knowing the buyer's (final) demand. In a pull mechanism, more suppliers competing for the contract does not necessarily benefit the buyer. This situation arises if/when the competition leaves the winner with too low a margin, which in turn causes

the winning supplier to select a very low capacity level. The authors suggest instituting a minimum price that the winning supplier could be paid (floor price), and then compare the enhanced pull contract with the push contract: The push contract dominates the enhanced pull contract when there are a large number of suppliers and the demand level is high. Conversely, they find that the pull contract dominates when demand uncertainty is large or the supplier cost level is high.

An Exploratory Study of Procurement Strategies for multi-item RFQs in B2B Markets: Antecedents and Impact on Performance

Tobias Schoenherr, Vincent A. Mabert

Today's dynamic global economy can be a challenging environment for purchasing managers soliciting multi-item quotations. Within this context, the study sought to address the interplay of a purchasing manager's objectives in determining procurement strategy for a multi-item request for quotation (RFQ), investigate the antecedents that may determine this strategy, as well as the subsequent impact on performance. Results, obtained from data collected in a large-scale survey among purchasing professionals, suggest that sourcing goals can be grouped into the objectives of best price, supply security, purchasing efficiencies, and bundle building. While buyers did not differ in their ranking of the objectives, they did so in terms of the intensity with which the four imperatives are pursued; respondents could thus be classified into the strategic groups of *strategists*, *opportunists* and *responders*. The investigation found that purchasers are more likely to fall in the *strategists* group when the purchase importance is high, when there is a better supply base availability, when the buyer possesses greater bargaining power, and when the buyer can rely on greater experience related to the items and the supply base. Contrary to expectations, market uncertainty did not influence the strategic stance of the buyer. Further, a more strategic approach to multi-item RFQs pays off – *strategists* recorded greater purchase performance than their less-strategic counterparts.

Differential Pricing for Information Sharing under Competition

Aditya Jain, Sridhar Seshadri, Milind G. Sohoni

Jain, Seshadri, and Sohoni consider a two-echelon supply chain where downstream retailers engage in quantity competition. Retailers have private information about demand uncertainty, and the manufacturer sets the contracting terms with the retailers. In such a competitive setting, manufacturer cannot achieve

truthful information sharing by offering uniform wholesale prices. The difficulty primarily arises due to information leakage. Therefore, in situations where information-sharing benefits are significant, the manufacturer should devise other mechanisms such that the retailers participate voluntarily and reveal information truthfully. As the authors show in this paper, it is indeed possible to offer a differential wholesale pricing contract that achieves this objective. The results illustrate that an additional dimension is required to achieve full information sharing in supply chains under competition. The proposed contracting mechanism uses information as another dimension. Retailers are rewarded for good news regarding demand thereby negating their tendency to under report demand forecast. The incentives are adjusted such that regardless of the actions of other retailers each retailer opts to participate by sharing information. It is also significant that the mechanism outperforms a single wholesale price plus side payment contract, thus emphasizing the need for the second dimension in the contract.

The Impact of Information Sharing and Advance Order Information on a Supply Chain with Balanced Ordering

Sheng Hao Zhang, Ki Ling Cheung

Due to limited delivery capacity or keeping operations smoothly, it is common for an upstream firm of a distribution system to stipulate her downstream parties to order cyclically in a balanced manner. The authors investigate how to incorporate shared demand information and advance order information into this staggered replenishment practice, and figure out which information is more beneficial to whom, under what circumstance, and by how much. The replenishment sequence is a vital decision for the upstream firm to maximize the value of the available information. For stochastically comparable end-customer demands, the authors are able to characterize the structure of the upstream firm's optimal sequence with advance order information and find the descending sequence in terms of variability or magnitude nearly optimal with information sharing. Moreover, they observe that the individual performance of downstream parties is barely changed with information sharing and worse off when generating advance order information. However, the supply chain may still benefit with advance order information, which indicates potential cooperation among the supply chain members. The aggregate inventory cost of downstream parties is quite insensitive to the sequencing decision. Hence the optimal sequence of the supply chain is similar to that of the upstream firm.

Life-Cycle Channel Coordination Issues in Launching an Innovative Durable Product

Genaro J. Gutierrez and Xiuli He

Gutierrez and He consider a firm which produces an innovative durable product (IDP) and relies on specialized retailers who serve the final market and provide technical support to the final users over an exogenously determined window of opportunity (i.e., the life-cycle of the IDP). The manufacturer adopts a long-term profitability strategy by maximizing its life-cycle profits. The specialized retailer may have a myopic profitability strategy by maximizing its immediate profit rate rather than its life-cycle profit. Conventional wisdom may suggest that the manufacturer will be hurt by the retailer's myopic strategy. Surprisingly, the authors' results show that when the market saturation is high at the end of the selling horizon, the manufacturer may prefer a myopic retailer to a forward-looking retailer who maximizes its life-cycle profit. In contrast, the manufacturer prefers the retailer to be far-sighted when the market saturation level is low or moderate. Furthermore, the authors show that the manufacturer can improve the channel efficiency by sharing the revenue with either a far-sighted or myopic retailer to achieve the integrated channel profit level.

Theoretical and Interpretation Challenges to Using the Author Affiliation Index Method to Rank Journals

Vijay K. Agrawal, Vipin Agrawal, M. Rungtusanatham

Agrawal, Agrawal, and Rungtusanatham formally review the Author Affiliation Index method as originally conceived by David Harless and Robert J. Reilly from the Economics Department at the Virginia Commonwealth University School of Business and as subsequently developed and interpreted by Gorman and Kanet. Through this formal review, the authors first highlight and discuss two important informational inputs that can impact the stability of the Author Affiliation Index scores for journals in any given set of to-be-evaluated journals. They then identify and challenge interpretations related to these scores (one theoretical, one statistical) offered by Gorman and Kanet that result in misleading conclusions about journal quality and that may potentially motivate inappropriate editorial behavior. For important professional decisions of hiring, performance evaluation, promotion, and tenure, caution against sole reliance on the AAI method for ranking journals and against exclusive interpretation of the score computed via the AAI method as an indicator of journal quality.