Higher prices but lower profits

Double marginalization and the decentralized supply chain

by Jon Hansen

DOUBLE MARGINALIZATION IS defined as the "exercise of market power at successive vertical layers in a supply chain." Dating back to Lerner (1934), the problem that arises as a result of double marginalization is tied to an impetus to mark up the product's price above marginal cost. In short, double marginalization drives the paradoxical outcome of higher buyer prices with lower seller profits.

According to a 2005 Caltech paper (*Vertical Integration of Successive Monopolists: A Classroom Experiment*) the sequence of mark-ups "leads to a higher retail price and lower combined profit for the supply chain than would arise if the firms were vertically integrated." However, the paper's suggestion that vertically integrated supply chains represent a sound response to the double marginalization issue is highly questionable.

This is due to the fact that vertically integrated supply chains are often inflexible in terms of responding to the diverse stakeholder dynamics that are reshaping the ways in which organizations buy and sell in the emerging global economy.

In a 2002 article, Forrester Research's Navi Radjou linked the lack of flexibility to the inherent problems of enterprise-centric applications from vendors such as Oracle. The specific problem is that batch-based supply chain tools "can't support swift resolution of supply chain glitches." The reason he gave is that "these apps need time to collect and synthesize data from multiple sources – even those unaffected by the exception at hand."

Radjou's conclusion that unlike "static, linear supply networks, the emergence of "adaptive supply networks" which will be "powered by multi-partner processes that are event driven, real-world aware and self-regulating" coincides with my own conclusions.

In earlier articles, I have referred to the meta-enterprise application which can create "on-the-go" real-world metrics that can be reliably incorporated into all purchasing decisions on a real-time basis to the benefit of all stakeholders.

It is important not confuse this with the widely touted service oriented architectures (SOA) promoted by industry heavyweights such as Oracle (Project Fusion) and SAP (Safe Passage). The SOA promise is but a shadow of the real-time capabilities associated with the dynamically synchronized meta-enterprise application. Specifically, the meta-enterprise application which even goes beyond the "loosely coupled" supply networks referenced in Radjou's article adapts to and therefore seamlessly integrates the multi-stakeholder supply chain. (Note: the term loose coupling has ironically evolved into the definition used to describe service oriented architectures.)

According to the findings of a 2005 Berkley paper (*Strategic customer behavior, commitment, and supply chain performance*), a "centralized supply chain may perform strictly worse than a decentralized supply chain" when customers are strategic in their buying patterns. While the references were mostly focused on retail sector customers, it is not unreasonable to conclude that this buying pattern can to varying degrees be extended to all industries as a result of the increasing scrutiny of purchasing practices within both private and public sector organizations.

Unfortunately, the Berkley conclusion that "double marginalization may benefit decentralized systems" is flawed within the context of a metaprise-centric supply chain. In short, they came to the right conclusions (re-decentralized systems) for the wrong reasons (that "reduced stocking intensifies the threat of stock-outs and thus also increases consumers' willingness-to-pay"). Allow me to explain.

Referring once again to the Caltech 2005 "classroom experiment" paper, the authors indicated that the problem with double marginalization arises when "more than one firm in the supply chain faces a downward sloping demand curve and has the incentive to mark-up the product's price. According to a Robert Schenk paper, a downward sloping demand curve occurs when a buyer must "expend time and effort to discover prices or the characteristics of the product." As a result, once the buyer has picked a seller they will "stay with that supplier as long as they find the exchange satisfactory." It is the prospect of a lengthy research process that stifles buyer willingness to look elsewhere while simultaneously fueling supplier motivation to increase price. As a result when multiple firms within a particular supply chain are in this position, the "sequence of mark-ups leads to a higher selling price and a lower combined profit for the supply chain."

However, in the decentralized (metaprise-centric) supply chain, the research expenditure time on the part of the buyer is dramatically reduced. As a result not only is the propensity on the part of the supplier to increase prices kept in check, the threat of stock-outs is virtually eliminated as a result of the buyer's ability to "reliably" engage a broader supply base.

With the advent of agent-based modeling and the emergence of the meta-enterprise application, we are entering a period of discontinuous innovation. Never before has the buyer had at their disposal the tools that equip them with critical intelligence on a real-time basis. This in turn creates both visibility and efficiency throughout the entire supply network. The end result is better prices for the buyer while still maintaining a fair and equitable level of profitability for the seller.

This eliminates a variety of problems including supply base erosion, myopic or narrowly defined costing practices, and diminishing end-customer service levels. It could also give senior executives a reason to possibly rethink a planned utilization of an outsourcing service for their purchasing requirements.

Note: To obtain a copy of the Caltech paper contact Jon Hansen by email at **jhansen@procureinsights.com** with "Caltech Paper" in the subject line. For the Berkley Paper, use the same e-mail address only reference "Berkley Paper" in the subject line.

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