

Research and Management Insights

Research Constituents and Authorship Patterns in the *Production and Operations Management Journal*

Brooke Saladin, Guangzhi Shang, Tim Fry, and Joan Donohue

Saladin, Shang, Fry, and Donohue analyze the research constituents of *Production and Operations Management Journal* since its inaugural issue in 1992 through 2012. During this time, POMS published 720 articles that were authored by 1,161 different authors who were affiliated with 337 academic institutions. The authors of this article identify the total research contribution to POMS from these academic institutions based on the articles by their affiliated faculty and their doctoral graduates. They contend that the research contribution of an institution is not limited to articles by affiliated faculty. Indeed, the articles published by an institution's doctoral graduates are also indicative of the research commitment at the institution. For any leading journal such as POM, it is important to understand the sources of research it is publishing since it is this research that ultimately determines its reputation, direction of research, and preferred methodologies and areas of study. With this in mind, Saladin, Shang, Fry and Donohue show that the constituent institutions publishing in POM represent respected academic institutions across the globe.

The Failure of Practical Intuition: How Forward-Coverage Inventory Targets Cause the Landslide Effect

John J. Neale, Sean P. Willems

Setting inventory targets for products with seasonal demand can be challenging in practice. Many companies utilize a forward days of coverage heuristic in which the safety stock target is calculated as a function of the forecasted demand that comes after it. This approach causes inventories to change prematurely, leading to unnecessary inventory when transitioning from a low season to a high season and, of even greater concern, low service levels when transitioning from a high season to a low season. The imbalance is especially pronounced for products with high seasonality, long lead times, and large forecast uncertainty. Practitioners can avoid this phenomenon by using

demand forecasts over the preceding lead time to calculate safety stock targets. Researchers can assist practitioners by developing heuristic methods to determine appropriate service level targets that balance overage and underage costs when transitioning between seasons.

When Gray is Good: Gray Markets and Market-Creating Investments

Romana L. Autrey, Francesco Bova, and David A. Soberman

There is strong evidence that gray market goods, sourced from low-priced emerging markets, erode the profits of authorized manufacturers. Surprisingly, surveys suggest that many manufacturers do not implement management control systems to curb gray markets, even when such systems are relatively inexpensive. Combining the survey results with the profit-reducing impact of gray markets, it is natural to ask why firms do not invest broadly in management control systems to limit gray markets. Romana Autrey, Francesco Bova and David Soberman explore whether two economic phenomena – firms investing to build emerging market demand and these investments benefitting a rival's demand (e.g., spillovers) – may help to answer this question. With gray markets, firms invest more because investments lead to higher emerging market prices (the gray marketer's cost base). This weakens the gray marketer's competitive position in the home market. When investments also confer spillovers, investments are more efficient and firms can be more profitable with gray markets provided the spillover effect is large enough. These results provide a perspective on why firms might not implement control systems to reduce gray markets in sectors where investment spillovers are common (e.g., the technology sector) and, more broadly, why gray markets persist in the economy.

The Role of Project and Organizational Context in Managing High-tech R&D Projects

Aravind Chandrasekaran, Kevin Linderman, Roger Schroeder

Managers often categorize and manage R&D projects based on the extent of change to the product, process,

customer and technology dimensions. However, this approach can be problematic in fast-paced high-tech organizations. Aravind Chandrasekaran, Kevin Linderman, and Roger Schroeder use qualitative case data from four high-tech business units involving 10 R&D projects to demonstrate the problems of managing R&D projects based on the extent of change. They propose a different approach based on the extent of the project's exploration and exploitation learning goals. Exploration involves introducing new generation of products, new processes, entering new technology or opening up new markets, while exploitation involves reducing variation, increasing efficiency and reducing costs. Using learning goals, the authors categorize R&D projects as incremental, radical and hybrid and argue that managers benefit from maintaining different project and organizational context depending on the type of the project. They empirically examine these differences using a multilevel survey of 110 R&D projects from 34 high-tech units. The analyses support the importance of managing projects differently based on the type of R&D project.

Call Center Delay Announcement Using a Newsvendor-Like Performance Criterion

O. Jouini, O. Z. Akşin, F. Karaesmen, M. S. Aguir, Y. Dallery

Providing delay announcements to waiting callers has become a common practice for call centers. The first challenge associated with this practice is to estimate delays in what is typically a complex queueing setting with time varying parameters and multiple caller types having different priorities. The authors adopt an approximation based approach to propose two delay estimators for such a real system and test these estimators in an extensive simulation study.

Even after having estimated the delay distribution that callers will face, the question of what to announce to a caller remains as the second challenge. Typical practice will announce the mean delay from the estimated distribution. Given the stochastic environment of a call center, the announced delays will not match reality exactly, and the caller will hear an over or under-estimation of the actual delay. Recognizing that callers may value an under-announcement differently from an over-announcement, the authors propose a newsvendor-like performance criterion for delay announcements. Accordingly, the manager can choose the delay to be announced from an estimated delay distribution under asymmetric penalties for over and under-announcement. Under this performance criterion, the proposed delay estimators are further tested using state dependent waiting time data from the call center. The analysis shows that an Erlang distribution based estimator performs well

under a broad range of under and over-announcement penalties, while announcing the mean results in good performance only for certain penalty values.

Would Allowing Privately Funded Health Care Reduce Public Waiting Times? Theory and Empirical Evidence from Canadian Joint Replacement Surgery Data

Hong Chen, Qu Qian, Anming Zhang

Patients' long waiting times in the public health system is a major concern for countries with universal health insurance. Whether to engage and/or how to engage private sector in resolving this problem is often subject to ideological arguments. The presence of a private sector can absorb part of the excessive public health care demands and mitigate the congestion level. However, the private sector may also attract some critical resources, such as human resources, away from the public health system and thus further deteriorate the mismatch between demand and supply. Which one of these two competing effects would prevail? The answer to this question is the key to disentangle the controversy. Hong Chen, Qu Qian, and Anming Zhang employed econometric methods to test a unique set of Canadian health care waiting time data and found that provinces that promote private care are associated shorter public waiting times, and the policy of government subsidizing private patients is effective in achieving waiting time reduction. These results suggest that private care should be considered as an alternative to solve waiting time problem in the public health system, and public funding to private care is the key in making private an option for patients.

Information Sharing in a Manufacturer-Supplier Relationship: Suppliers' Incentive and Production Efficiency

Ying-Ju Chen, Mingcherng Deng

The Toyota and Honda experiences have demonstrated how the concept of continuous improvement leads to various materialistic benefits, and the importance of information sharing with their supplier networks. Ying-Ju Chen and Mingcherng Deng provide the first-cut academic investigation of the successful implementation of voluntary information sharing in such a context. Taking a game-theoretical perspective, they construct a dynamic adverse selection model in which the supplier privately observes her production efficiency. In the contractual duration, the manufacturer obtains an informative but imprecise signal regarding this private efficiency. The authors explain why information sharing may benefit the supplier despite the disclosure of proprietary information, and

they show that the supplier's voluntary participation is more likely to occur when the shared information is rather imprecise. On the other hand, their analysis reveals that information sharing may sometimes lead to an upward distortion that ultimately hurts the supply chain. They also document the non-trivial impact of the timing of information sharing on the supplier's incentive to participate.

Decision Bias in Capacity Allocation Games with Uncertain Demand

Yefen Chen, Xiaobo Zhao

Yefen Chen and Xiaobo Zhao examine the ordering behavior in a capacity allocation game when the retailer is uncertain about her opponent's market demand. Through conducting a laboratory experiment, the authors find that theoretical "Bayesian Nash equilibrium" solutions exaggerate the retailer's tendency of both telling the truth and ordering more than they need. They develop a behavioral model that considers mental accounts and decision errors and in which participants may have different mental weights on the underage and overage costs. The authors suggest that (a) participants weigh the marginal loss of the underage cost more heavily than the marginal loss of the overage cost, when the underage cost is smaller than the overage cost, and vice versa; and (b) the weight of the marginal loss of the underage cost is increasingly larger than the weight of marginal loss of the overage cost, as the game plays repeatedly. The results show that the actual behavior may deviate from the standard theory in significant and predictable ways.

Replenishment Policies for Multi-Product Stochastic Inventory Systems with Correlated Demand and Joint-Replenishment Costs

Haolin Feng, Qi Wu, Kumar Muthuraman, Vinayak Deshpande

Haolin Feng, Qi Wu, Kumar Muthuraman, and Vinayak Deshpande highlight the importance of incorporating demand correlation across multiple

products in managing inventory. The authors show that demand correlation affects the optimal policies in two ways. First, managers need to group and consolidate replenishment orders of different products to save on the ordering cost. In particular, a replenishment order may include certain products that do not need an immediate replenishment when considered individually. Second, inventory levels after replenishment should be set such that, when correlated demand occurs, the inventories for different products are likely to diminish and trigger replenishment orders at around the same time. This way, replenishment orders across multiple products will be coordinated and, as a result, reduce inventory holding and ordering costs. The authors propose an intuitive inventory policy that is effective in incorporating correlation into ordering policies, and can solve large, real-world problems

The Role of Discount Vouchers in Market with Customer Valuation Uncertainty

Fei Gao, Jian Chen

Fei Gao and Jian Chen study the discount voucher, a mechanism widely used by merchants in the service industry nowadays due to the success of online voucher vendors like Groupon and LivingSocial. In the discount voucher market, customers usually face two types of valuation uncertainty, namely, preference uncertainty and consumption state uncertainty. Preference uncertainty is related to the customer's lack of relevant experience with the merchant, whereas consumption state uncertainty is related to the advance selling nature of the discount voucher mechanism. By taking a comprehensive perspective (i.e., considering revenue management and promotion effect at the same time), the authors find: (i) no show of voucher buyers may not be a good thing for the merchant, especially for those large or start-up ones; (ii) offering refund may always hurt the merchant's profit and the PayPal model may not be optimal in terms of maximizing social welfare; and (iii) market segmentation is not necessary for the profitability of promotion.