



Management Science

Publication details, including instructions for authors and subscription information:
<http://pubsonline.informs.org>

Management Insights

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To cite this article:

Michael F. Gorman, (2010) Management Insights. Management Science 56(11):iv-vi. <https://doi.org/10.1287/mnsc.1100.1276>

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Management Insights

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Design and Analysis of Diagnostic Service Centers (p. 1873)

[Xiaofang Wang](#), [Laurens G. Debo](#), [Alan Scheller-Wolf](#), [Stephen F. Smith](#)

How can phone-in diagnostic service centers improve service and reduce costs in health care? According to the Centers for Disease Control and Prevention, of an estimated 113.9 million emergency room visits during 2003, 13% were nonurgent. At an estimated average cost of \$300 per emergency room visit, a cost of \$4.4 billion can be managed more efficiently by directing patients to the appropriate care center. To help with this problem, diagnostic service centers provide advice to patients over the phone about what the most appropriate course of action is based on their symptoms. Managers of such centers must strike a balance among accuracy of advice, callers' waiting time, and staffing costs by setting the appropriate staffing levels, skills sets, and service depth. Patients decide whether to use such a diagnostic based on their expectation of accuracy of advice and wait time due to call congestion. The authors find that the dual concerns of accuracy and congestion lead to a counterintuitive impact of capacity: Increasing capacity might increase congestion. The insight for management: Staffing, quality, and depth of service considerations require careful consideration in health care.

Reference Dependence in Multilocation Newsvendor Models: A Structural Analysis (p. 1891)

[Teck-Hua Ho](#), [Noah Lim](#), [Tony Haitao Cui](#)

How many newspapers should a newsvendor stock, given that demand each day is uncertain? On one hand, the newsvendor likes to stock enough to provide a high service level. On the other hand, overstocking newspapers will lead to wasteful excess inventory. Researchers have found that there are psychological costs of leftovers and stockouts, tending to result in a "pull-to-center" bias. The authors confirm this result and further find that the psychological aversion to leftovers is greater than the disutility for stockouts; the pull-to-center is greater from the right.

They test their hypothesis with both the centralized and decentralized inventory structures using experimental subjects motivated by substantial financial incentives. They find that the degree of bias is greater in the high-profit margin than in the low-profit margin condition, which is counterintuitive, given that with high profit margins there is greater economic incentive to overstock and have leftovers. The insight for management: Managers may exhibit a bias toward stocking for the mean demand, which may inhibit their ability to achieve a level that optimally balances its costs and benefits.

Manipulation Robustness of Collaborative Filtering (p. 1911)

[Benjamin Van Roy](#), [Xiang Yan](#)

Netflix, Amazon, and the like allow customers to get recommendations from other customers with similar tastes through a "collaborative filtering system." Perhaps because of their success, collaborative filtering systems influence purchase decisions and hence have become targets of manipulation by unscrupulous vendors. The authors demonstrate that the algorithms used in these services are highly susceptible to manipulation and introduce new collaborative filtering algorithms that help to reduce this unwanted tampering. The insight for management: Providing a service like a collaborative filtering system is an advantage for customers only if they can trust its content; advanced methods may help to better prevent misleading information.

Technology Usage and Online Sales: An Empirical Study (p. 1930)

[Prabuddha De](#), [Yu \(Jeffrey\) Hu](#), [Mohammad S. Rahman](#)

How do online consumers use search and recommendation technologies on the Internet? Does consumers' technology usage have an effect on their purchasing habits? The authors study the relationship between shopper technology usage and online sales and find

a significant relationship, but this effect varies for different technologies and across different products. In particular, the use of directed search has a positive effect on the sales of promoted products, whereas it has a negative effect on the sales of nonpromoted products. In contrast, the use of a recommendation system has a positive effect on the sales of both promoted and nonpromoted products. Surprisingly, the use of nondirected search has an insignificant effect on online sales. The insight for management: Careful consideration of how different online technologies affect customer behavior is critical to achieving desired sales.

Trading Higher Software Piracy for Higher Profits: The Case of Phantom Piracy (p. 1946)

[Ram D. Gopal, Alok Gupta](#)

Approximately \$50 billion per year are lost to software piracy, which is widely regarded as one of the biggest problems facing the software industry. As a result, the industry has adopted a number of technical, legal, and economic strategies to curb piracy and stem the resulting losses. At the same time, the software industry has made increasing use of product bundling, which enables sellers to extract higher profits from buyers. The authors find that the practice of product bundling can increase the presence of piracy but that, despite this, bundling can be profitable even when the act of bundling increases the piracy level of one of the products in the bundle. With such “phantom piracy,” sellers trade higher piracy for one product in favor of lower piracy for the other product while deriving overall higher profits. The use of price discounting of bundles deters piracy. The insight for management: Bundling coupled with steep price discounts can be an effective deterrent to piracy, while consumers also benefit from higher surplus.

Optimal Bundling Strategies Under Heavy-Tailed Valuations (p. 1963)

[Rustam Ibragimov, Johan Walden](#)

The authors develop a framework for the optimal bundling problem of a seller who provides goods to consumers who value the products differently. When there are “heavy tails”—an exceptionally high number of customers who assign extreme valuations to the products—buyers prefer unbundled products. For products with low marginal costs, the seller’s optimal strategy is consistent with consumer preferences: to provide goods separately when consumers’ valuations are heavy tailed and in a single bundle when valuations are thin tailed. These conclusions are reversed for goods with high marginal costs. The insight for management: Seller and buyer bundling

preferences can diverge as the cost structure of the product increases.

Prediction Markets: Alternative Mechanisms for Complex Environments with Few Traders (p. 1977)

[Paul J. Healy, Sera Linardi, J. Richard Lowery, John O. Ledyard](#)

Double auction prediction markets have proven successful in applications such as elections and sporting events. Consequently, several large corporations such as Google and Intel have adopted these markets for smaller-scale internal applications like revenue forecasting where information may be complex and the number of traders is small. The authors find that when information is complex, an iterated poll (or Delphi method) outperforms the double auction mechanism. The insight for management: More traditional forecasting methods may be more appropriate in small-scale situations with complex information.

Optimal Portfolio Liquidation with Distress Risk (p. 1997)

[David B. Brown, Bruce Ian Carlin, Miguel Sousa Lobo](#)

How should large holders of equities liquidate large holdings? The authors analyze the problem of an investor who needs to unwind a portfolio in the face of recurring and uncertain liquidity needs while accounting for both permanent and temporary price impacts of their trading. They show that a risk-neutral investor who myopically deleverages his position to meet an immediate need for cash always prefers to sell more liquid assets. But if the investor faces the possibility of a sizable downstream shock, the non-myopic investor unwinds positions more quickly and retains more of the assets with low temporary price impact in order to hedge against possible distress. Generally, optimal liquidation involves selling more of the assets with a more temporary and less permanent impact, even if these assets are relatively illiquid. The insight for management: Properly accounting for the possibility of future shocks should play a role in liquidating large positions in portfolios.

Time-Tradeoff Sequences for Analyzing Discounting and Time Inconsistency (p. 2015)

[Arthur E. Attema, Han Bleichrodt, Kirsten I. M. Rohde, Peter P. Wakker](#)

Are preferences dependent on the passage of time? The authors develop a general tool to analyze intertemporal choice. The authors suggest that currently popular discount functions used in the literature do not account well for this possibility and

suggest new measures that do. The insight for management: To appropriately model consumer choice, it may be advisable to reconsider intertemporal effects in consumer choice.

Conditional Coskewness in Stock and Bond Markets: Time-Series Evidence (p. 2031)

Jian Yang, Yinggang Zhou, Zijun Wang

How are risks of stock related to the returns of bonds, and vice versa? Coskewness is the return of one asset relative to the volatility of the other. The authors evaluate U.S. stock coskewness (the relation between stock return and bond volatility) and bond coskewness (the relation between bond return and stock volatility). They find that the relationship is statistically and economically significant and confirm these results with data from the United Kingdom. The insight for management: When evaluating risk and reward of portfolios, coskewness might be a factor to consider.

Modifying the Mean-Variance Approach to Avoid Violations of Stochastic Dominance (p. 2050)

Pavlo R. Blavatsky

The Nobel-Prize-winning work of Dr. Harry Markowitz in the 1950s on portfolio theory proposes a mean-variance approach to balancing risk and return from a portfolio. The risk measure used, variance, although popular, is unduly subject to outlier observations because errors are squared. The author proposes “mean absolute semideviation,” which weights errors linearly rather than quadratically. The insight for management: Improved risk measures may lead to recommended optimal portfolio strategies that do not exhibit behavioral irregularities.

On the Number of State Variables in Options Pricing (p. 2058)

Gang Li, Chu Zhang

How should options prices be modeled? The authors investigate the methodological issue of determining the number of state variables required for options pricing. They propose a nonparametric regression technique based on the “moneyness” of the option (the probability of a position having a positive economic value at maturity) and the time to maturity. The methodology is applied to the prices of

S&P 500 index options from the period 1996–2005. They find that two state variables based on two non-linear principal components are adequate for pricing the index options and fitting the data in both time series and cross sections. The insight for management: Option pricing errors can be reduced through improved choice on the state variables chosen.

Target Age and the Acquisition of Innovation in High-Technology Industries (p. 2076)

Sam Ransbotham, Sabyasachi Mitra

When should mature technology companies like Microsoft acquire entrepreneurial firms with innovative products? Should organizations wait until more information is available about the target and its markets so that a better valuation can be obtained, or should the target be acquired early to lower acquisition cost and gain early access to key technologies? External acquisition of new technology is a growing trend in the innovation and product development process as firms complement internal research and development efforts with aggressive acquisition programs. In a study of the telecommunications industry from 1995 to 2001, the authors find evidence that supports acquiring early in the face of uncertainty. The insights for management: Early acquisition of innovative technologies may provide more flexible growth options that provide greater opportunities for synergistic fit, and greater valuation uncertainty of young companies may lead to a lower acquisition price.

Network-Independent Partner Selection and the Evolution of Innovation Networks (p. 2094)

Joel A. C. Baum, Robin Cowan, Nicolas Jonard

How do firms select strategic alliances? Most research on strategic alliances has focused on the idea that partners are selected on the basis of social capital considerations; firms tend to build on existing relationships. The authors emphasize the role of complementary knowledge stocks and knowledge dynamics in the formation of innovation networks. They focus on the idea that firms’ knowledge bases must “fit” for joint learning and innovation to be possible, and thus for an alliance to be feasible. The insight for management: Firms ally for the purpose of learning and innovating; knowledge creation might be a better indicator and motivator for strategic alliances than social history.