



Service Science

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

Service Spotlights

To cite this article:

(2019) Service Spotlights. Service Science 11(2):ii-iii. <https://doi.org/10.1287/serv.2019.0243>

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Promoting Clean Technology Adoption: To Subsidize Products or Service Infrastructure? (p. 75)

Clean technology products (e.g., electric vehicles and solar photovoltaic panels) are key to sustainable development of sectors such as transportation and energy. Often, adoption of such products relies on development of supporting service infrastructure, for example, charging networks or energy-storage systems, and is often hindered by the “chicken-and-egg” dilemma: firms are reluctant to make capital-intensive investments before sufficient consumer adoption, and consumers hesitate to adopt without supporting infrastructure. Aiming to overcome this issue, the article examines the efficacy of two forms of government subsidies (as well as their combination), namely service infrastructure subsidy and product subsidy. Although both types of subsidies are generally conducive to clean-technology adoption, the study finds that these subsidies can be detrimental under certain conditions. In particular, the former may cause early adopters to delay their purchase, and the latter may interfere with the firm’s investment incentives and lead to reduced overall adoption. The article identifies the optimal subsidy strategy that follows a “sandwich rule:” it is optimal to provide only the product subsidy when the infrastructure deployment cost is sufficiently high or sufficiently low; however, it is optimal to subsidize both if the cost falls in the moderate range.

Impact of In-Store Promotion and Spillover Effect on Private Label Introduction (p. 96)

In this paper, the authors investigate the impact of in-store promotion and its spillover effect on private label introductions. Studying different retail supply chain scenarios in which the retailer carrying a national brand may introduce its own private label product and promote either the national brand or the private label inside the store, they find the in-store promotion on one product has a positive spillover effect on the other product. Without in-store promotion and spillover effect, the conventional wisdom indicates that, in a retail supply chain, the national brand manufacturer will be negatively affected by the introduction of a private label product. With in-store promotion and spillover effect, however, the national brand manufacturer can actually benefit from

the private label introduction. When the spillover from national brand to private label is high, the retailer prefers to promote the national brand product. When the spillover from private label to national brand is high, promoting the private label product can also benefit the national brand manufacturer. With a symmetric spillover rate, the national brand manufacturer can still benefit from the private label introduction, as long as the retailer promotes the national brand product, the horizontal competition is not intense, or the private label product quality is sufficiently low.

Regional Planning Model for Cancer Screening with Imperfect Patient Adherence (p. 113)

The effectiveness of cancer screening and adherence to cancer screening guidelines can be inhibited by long wait times for screening appointments. In this article, the authors develop a queueing network model of screening for a disease within a population of patients with imperfect adherence to screening guidelines to characterize the relationship between the screening request frequency rate and the wait time for screens. They first use their model to derive the capacity needed by a given system or the population size a given system can serve to guarantee a certain service level, and then analyze routine screening for average-risk patients as well as the additional capacity required for diagnostic screening and surveillance of high-risk patients. Finally, the authors perform a numerical study using national public health data for colorectal cancer (CRC) screening in the United States and provide insights for public health officials, providers, and policy makers, showing how queueing models can be applied to regional planning decisions for determining CRC screening capacity requirements.

Altering the Environment to Improve Appointment System Performance (p. 138)

Current research on clinic performance is focused primarily on appointment scheduling rather than shaping the clinical environments. The goal of this study is to investigate the impact of environmental factors on the total cost performance of a clinic, measured as a weighted sum of patients’ wait times and a physician’s idle time and overtime. The environmental factors investigated include the variability of service

times, the probabilities of no-shows and walk-ins, the number of appointments per session, and the cost ratio of the physician's time to patients' time. The effects of these factors are evaluated using a near-optimal rule that already adjusts the patients' appointment times to minimize the negative effects of these factors so that their residual or true effects on total cost performance can be isolated. As a result, this study provides

useful insights for healthcare practitioners in prioritizing their efforts in managing the different sources of variability to further improve the clinic performance beyond the use of an optimal or near-optimal appointment rule. Additional experiments are conducted on the effects of patient and physician unpunctuality, which have been studied to a lesser extent in prior literature.