“Membership has its Benefits”: Subscription Pricing for Free Delivery Services

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In recent years, many internet retailers have supplemented their traditional pay-for-delivery (PFD) pricing by introducing membership plans that provide free delivery services for a fixed annual subscription fee. Intuitively, these free-delivery-subscription (FDS) plans are likely to attract precisely those consumers for whom the delivery costs exceed the subscription fee. Indeed, data from leading internet retailers show that their actual annual delivery costs can be as high as twice the revenues they get from delivery charges and subscription fees. Why then do retailers offer FDS plans? To understand how the FDS option can increase firm profits, we develop a novel utility-based model that highlights two main advantages, observed in practice, of introducing a FDS plan, namely, the “lift” in a current customer’s demand when she subscribes to the FDS plan instead of purchasing using the PFD option, and the possibility of attracting new consumers. Our modeling framework considers heterogeneity among consumers along two dimensions – their utility for the product and their preference (opportunity cost) for purchasing from the firm using the PFD option. We impose only mild assumptions, and do not require particular utility functions or distributions of opportunity cost. For this general setting, we demonstrate that economic reasons alone suffice to explain the lift in demand, without assuming any separate behavioral factors. Importantly, we show that offering the FDS option increases firm profits even though the optimal subscription fee is not sufficient to cover the firm’s actual shipping cost. Moreover, the FDS option also benefits consumers. For the FDS option, we consider the two strategies of either introducing a single “Universal” plan or offering multiple “Tiered” plans (with varying subscription fees and free delivery limits). Our analysis of these strategies, augmented with computational results, yields several interesting managerial insights on the drivers of the optimal policy, profits, and market share, and their sensitivity to product, consumer, and market characteristics. The approach and results also apply to other related contexts such as subscription pricing for information goods and access services.

(joint with Chinmoy Mohapatra and Shankar Sundaresan)