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(*Abstract Only*)

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ABSTRACT

Global e-commerce sales have reached over $1 trillion and e-commerce has experienced unprecedented prosper for the past years. Along with this remarkable growth is the emergence of giant online retailers such as Amazon.com in the U.S. and JD.com in China. Traditionally these retailers adopt merchant revenue model under which they buy products from suppliers and resell to consumers. Over years, the leading online retailers have developed a considerable consumer base. With the options of reaping their dominance via their merchant revenue model, interestingly, these retailers open their platforms and allow third-party sellers to sell on their platforms, thus inviting competition. Small merchants might use the platforms to reach customers who otherwise would not know the existence of the merchants, and are attracted to the retailers' platforms by the promise of tapping into their huge user base. Third-party sellers report an average of 50% increase in sales when they join Amazon's platform. In turn, Amazon takes a commission for every sale (e.g., 6% for personal computers and 15% for mobile phones). Intuitively, both the retailer and the third-party sellers benefit from the partnership if the third-party sellers sell products different from those offered by the retailer. However, one puzzling phenomenon is that these retailers allow third-party sellers to sell identical products as those offered by the retailers, and we often observe both a retailer and a third-party seller offering the same product on the retailer's platform.

More interestingly, many third-party sellers have their own websites and carry more products than retailers in some specific category, and when they join a retailer's platform they sell some of their products on the retailer's platform. Sometimes these third-party sellers may even choose to sell the same product as the retailer, instead of different products, on the retailer's platform. For example, www.HANDU.com sells clothing for women, men, and kids on its own website, but only sells women dress on JD.com. Conceivably, the sellers do so because the presence of sellers on a retailer's platform can increase the traffic to the sellers' websites: When a product by a third-party seller is listed on a retailer's platform and is exposed to its consumers, some of the consumers may also become aware of the other products offered by the seller, with the help of different online tools such as search engines. We call this cross-product awareness increase spillover effect of consumer awareness.

This paper aims to answer the following questions. With an open platform and a given commission rate, how does the spillover effect affect a third-party seller's incentive to join a retailer's platform and how does the spillover effect affect its product offering on the platform? We develop a game-theoretic model in which the platform is open and the commission rate is given, and the third-party seller carries identical products as the retailer as well as exclusive products that the retailer does not carry. The third party chooses whether to join the platform; If so, the third party chooses which product(s), the identical product, the exclusive product, or both products, is/are sold on the retailer's platform.

We find that the third party's optimal selling strategies vary with its initial awareness, the extent of spillover effect, and the commission rate. Specifically, for a low commission rate, when its initial awareness and spillover effect are mild, the third party sells both identical and exclusive products on the retailer's platform; when its initial awareness is high or spillover effect is salient, the third party sells exclusive products only. For a high commission rate, the third party only sells identical products if the spillover effect relative to initial awareness is significant; otherwise, the third party does not offer any product.
In particular, even when the commission rate is very high, the third party may still have incentive to sell the identical product on the retailer's platform. For instance, when the spillover effect relative to the initial awareness level is significant, even the retailer asks for the whole revenue of third party's sales on the retailer's platform, the third party still optimally chooses to sell the identical product on the retailer's platform. This surprising result is because in this case the spillover effect is more important than the initial awareness, the benefit of increased demand for exclusive product resulting from spillover effect outweighs the cost of contributing the revenue from the identical product to the retailer.

Keywords: Online retailing, spillover effect, coopetition, consumer awareness

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