2007 M&SOM Best Paper Award

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It is a pleasure to announce that the first Manufacturing & Service Operations Management Best Paper is “Strategically Seeking Service: How Competition Can Generate Poisson Arrivals” by Martin Lariviere and Jan Van Mieghem (2004) of Kellogg School at Northwestern University. This annual award is given to one paper, published in one of the prior three volumes of M&SOM, deemed by the M&SOM Editorial Board as most deserving for its contribution to the theory and practice of operations management. For their accomplishment, Professors Lariviere and Van Mieghem will share $2,000, which was generously contributed by the Manufacturing and Service Operations Management Society of INFORMS to support this award.

In short, this paper is about managing service systems in which consumers strategically choose when to seek service. In the base model, consumers do not care about when they receive the service nearly as much as how long they have to wait to be served. Hence, consumers try to enter the service system when they think it will not be crowded, knowing that all other customers are doing the same thing. Interestingly, this situation harbors an enormous number of equilibria, but one of them is simple and intuitive, therefore focal and straightforward to implement. This equilibrium continues to hold under numerous extensions, including customer segments with different waiting costs (some of us are more patient than others), time-varying preferences (we all like to eat lunch around noon), and limited capacity (an unfortunate reality for most service systems), among others.

This paper asks two new and fundamental questions that have somehow been missed by queueing theorists and economists—1— if consumers want to avoid delays and congestion (which they naturally do) and they are strategic (again, a plausible premise), then how will they choose to arrive to a server and will that arrival process resemble in any way what is generally assumed to be a Poisson process? It then follows through with satisfying and complete answers. In particular, rest assured, it is indeed reasonable to assume that strategic consumers will arrive to a service with a process that is well approximated by a Poisson process. Although some may take this result for granted, Lariviere and Van Mieghem explain to the reader the subtle complications associated with this conclusion and why simple intuition can in fact be too simple in this setting.

The M&SOM Associate Editors recommended this paper for its novel modeling, the clarity of its analysis, the value of its insights, and the high quality of its writing. A sampling of the comments from the Associate Editors includes:

…There are at least two great things about this paper. First, it shows that assuming Poisson arrivals is an acceptable simplification even when consumers are

1 Queuing theorists have considered strategic behavior once consumers arrive at a service system, such as whether to join a queue or which queue to join, but the arrival process is always taken as given (see Hassin and Haviv 2003 for a review of this literature). Economists have studied various settings with congestion, such as transportation problems (e.g., Arnott et al. 1993), or the pricing of queues (e.g., Barro and Romer 1987), but they have not considered how the strategic behavior influences the nature of the arrival process. Economists have also studied strategic timing games in the context of matching markets (e.g., Roth and Xing 1994)—markets in which one set of agents need to be matched with another set of agents (such as men and women in marriages, college football teams to bowl games, medical interns to hospitals, etc.) However, congestion plays a different role in those games (in some cases agents want to arrive at the market at the same time as the other agents because that provides a greater pool of people to trade with), and again there is no consideration of how strategic behavior influences the arrival process.
strategic…. For this reason I expect that this paper will be widely cited going forward. Second, the paper offers a simple, yet clever, analysis of the problem which formalizes earlier attempts to solve the same problem using modeling, simulation and experiments.

...(the paper is) a perfectly executed attempt at bridging a still significant gap between the rigid premises of classical operations models and the developments in the economics literature.

The main strengths of the paper are innovative modeling, interesting analysis, and potentially high impact to theory. Overall it has made a fundamental contribution to the theory of operations management.

A blend of game theory and basic stochastic processes…its simplicity and aesthetics cannot be denied…the paper will, without doubt in my opinion, provide a standard reference for the multitude of yet unwritten papers assuming Poisson arrivals/demand.

As Editor of M&SOM, I enthusiastically share the AEs praise for this piece of scholarship. I am confident this paper will provide a solid platform for future research, especially research on how strategic behavior by customers influences, and is influenced by, the operational decisions of firms. The journal can be quite proud for selecting this paper as the first M&SOM Best Paper.

References

2 Examples of recent papers that explore the impact of strategic consumers include: Alexandrov and Lariviere (2006), Aviv and Pazgal (2007), Cachon and Swinney (2007), Elmaghraby et al. (2006), Su and Zhang (2006), and van Ryzin and Qian (2007). A consistent theme among these papers is that consumers can anticipate the pricing and capacity decisions of firms over time as well as the behavior of other consumers. Consumers use these expectations to guide their actions, which in turn must lead to actual behavior that is consistent with their expectations. Similarly, firms recognize this behavior and act accordingly.