SELFISH OR ALTRUISTIC? THE IMPACT OF CUSTOMER ROUTING IN A SELF-SERVICE QUEUE

Hakjin Chung, University of Michigan, United States, hakjin@umich.edu
Hyun-soo Ahn, University of Michigan, United States, hsahn@umich.edu
Rhonda Righter, UC Berkeley, United States, rrighter@ieor.berkeley.edu

We consider a firm who can provide service in both full-service and self-service modes and examine how customer's selfishness to improve their own utility influences the optimal service rate for full service. We show that selfish routing increases the traffic toward the full service and resultant delay while the socially optimal customers may choose to avoid the full-service line when the benefit of reducing the negative externalities for other customers outweighs their own benefit. Consequently, the provider tends to build a higher capacity than when customers self-regulate to increase the traffic. We also show that the duplicated efforts to increase the surplus from both customer's and firm sides may result in the lower surplus than when either customer or firm exerts effort.