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THE BENEFIT OF INFORMATION IN A SINGLE-SERVER QUEUE WITH HETEROGENEOUS SERVICE VALUATIONS [ABSTRACT]

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ABSTRACT

Aim/Purpose	How does heterogeneous valuation of service affect optimal control of queues?
Background	We analyze this heterogeneity by adding a component of travel costs, which differ with distance from the service point.
Methodology	Mathematical analysis of queuing theory. Analyzing the anarchy function.
Contribution	Enabling consumers to make optimal choices based on knowledge about their status, and enabling better control of the organizer.
Findings	In the arrival rate is bounded, there is no need of interference. If it is unbounded then in many cases the organizer should impose the socially optimal queue length.
Recommendations for Practitioners	In the arrival rate is bounded, there is no need of interference. If it is unbounded then in many cases the organizer should impose the socially optimal queue length.

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Benefit of Information in a Single-server Queue

Recommendations for Researchers	Explore the following points: What happens when there is more than one server, located at different points? How should consumers behave, and what is the best way to locate service points?
Impact on Society	Handling queues taking into account social welfare.
Future Research	What happens when there is more than one server, located at different points?. How should consumers behave, and what is the best way to locate service points?
Keywords	queuing, profit maximization, price of anarchy, observable queue

BIOGRAPHIES



Irit Nowik is the head of the Industrial Engineering and Management Department at the Jerusalem College of Technology. Her research focuses on Game Theory, Queueing Theory and Computational Neuroscience. She has received her B.Sc in Mathematics, M.Sc in Operations Research and PhD in Computational Neuroscience from the Hebrew University of Jerusalem.



Refael Hassin studied Economics and Operations Research at Tel Aviv and Yale Universities. His research focuses on Network Flows, Combinatorial Optimization, and economics of queues. He is a co-author of "To Queue or not to Queue: Equilibrium Behavior in Queueing Systems" which is the first published book on strategic queueing models, and the author of "Rational Queueing." He is a professor at the School of Mathematical Sciences, Tel Aviv University, and holds the chair of Operations Research.



Yair Shaki received the B.S. degree in mathematics in 2002, the M.S. degree in 2003, and the Ph.D. degree in 2008, from Bar-Ilan University, Ramat Gan, Israel. He is the author of 7 articles. His research interests include differential equations, theory of queues and stochastic processes. Dr. Shaki's awards and honors include the Excellence Award (Jerusalem College of Technology) in 2016 and Uriel G. Rothblum Prize for Excellent Work in Operations Research (Operations Research Society of Israel) in 2015.