Project No.	Project Title	
2021-01-168	Threshold strategic in ticket queues	
Academic Advisor		**Co-Advisor**
Dr.Yoav Kerner		
Team Members		
Gal Sagi		
Galsagi31@gmail.com		

Abstract

In many real-life queueing systems, a customer may balk upon arrival at a queueing system. Customer who decided to balk upon arrival is usually substantiates his decision due to long waiting time, which is a derivative of the length of the queue and the service time. The customer decision is also based on the type of strategy he chooses. One type of strategy is a threshold strategy, whereby the customer chooses whether to join the queue according to the number of people he sees in front of him in the queue. In ticket queuing systems, when a customer decides not to join the queue, his number remains in the system. The system understands that the customer is not present only when it is his turn to receive service.

In this work, we consider a Markovian queue with infinite capacity and examine what is the best response to the individual consumer, with the rest of the customers in the system adopting a threshold strategy. That is, we examine whether adopting a single consumer threshold strategy is a Nash equilibrium. Our model is under the assumption that the response time of the server when he finds out that a customer balked is non-negligible, and it is expressed in an exponential parameter θ. The objectives of the study are to model and analyze the system in question and the behavior of the individual.

In this work, we show numerically and depending on the size of a parameter θ, that as the parameter increases no threshold strategy can be a Nash equilibrium strategy. Later in the study, evidence will be constructed for this numerical confirmation.

Keywords: Ticket, Nash equilibrium, Service system, Markov queues