# Non-Markovian Queuing Model with Parallel Service Channels

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## Abstract

With the explosion of population and with overall aim of enhancing the rate of economic and commercial development, the service system has to be such that it meets the requirements of customers in reducing the waiting time in addition to providing them efficient and quick service. Also, in a competitive market the customers are found to display the influence of upward and downward trend in business of a business house through their input/output to/from a service facility. In such a case, the input to the system may be found to take place in groups of random sizes and arrivals/departures of customers at a point time may be influenced by those at the preceding points of time. This necessitates the study of a model with a number of parallel service channels having non-Markovian arrivals/departures mechanism. Keeping such a situation in view, this paper deals with $k$-parallel service channels having bulk arrivals and non-Markovian departures. Laplace transforms of the probability generating function for queue length distributions are obtained and steady state results are derived therefrom. Lastly some particular cases of the model are discussed.