On the operating characteristics of queuing system for an NNPC mega station in Nigeria

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In this work, an understanding is sought of Queuing characteristics at an NNPC Mega station in Nigeria when petrol is easily available so as to compare with the queuing characteristics when there is petrol scarcity which is a recurring decimal in the country. The Mega station with queuing discipline of First-In First-Out, a service mechanism of single-queue multiple-channels and a system capacity of an infinite source has distinct operating characteristic of traffic intensity being 0.77. Further analysis of the queuing characteristics revealed that, the average number of vehicles in queue is from 2 to 3 while the average time a vehicle spends in queue is 1.58 minutes. The probability of vehicle queuing on arrival is 0.5993 while there is a 0.4007 probability that a vehicle may not queue on arrival. It was concluded that with 1.8 minutes, a vehicle spends more time in service than on the queue and since the number of vehicles on the queue is < the number of active servers, there is no queue at NNPC Mega station Minna when there is no fuel scarcity country.

Keywords: Queuing Model; Inter-Arrival Time; Survive Rate; Balking; Reneging; Jockeying; traffic Intensity; Poisson Process.