

SINGLE PHASE MULTI CHANNEL MODEL (M/M/c) FOR EFFECTIVENESS OF QUEUE SERVICES

(Case Study: Toolboth Krapyak, Manyaran Semarang)

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ABSTRACT

The queue process is a process that is related to the arrival of customers at a service facility, waiting in the queue line if it cannot be served, is served and finally leaves the facility after being served. There are several queue models that can be used to solve queue problems, one of which is the model (M / M / c). The queue model is used to resolve queue problems that have a large number of available servers in one service phase. Queues are often found in daily life, especially in public service places such as payment services at toll booths. Payment services at Krapyak toll booth have 4 servers consisting of 2 servers Automatic Toll Gate and 2 Conventional Toll Station servers. This study aims to determine system performance. queue payment service at Krapyak toll booth, especially on 1st shift (05.00-14.00) and shift 2 (14.00-22.00). After going through the process of data collection, calculation and processing of data using the queuing model (M / M / c), it is known that the arrival pattern of the vehicle is Poisson distribution and the payment service time is distributed poisson. The service queue system performance at the Krapyak toll booth can be said to be effective, because Steady State in each stage is less than 1 with an average waiting time at the longest GTK 4.9 minutes in the queue and 5.4 minutes in the system. The most number of vehicles waiting in the system for GTK is 14 vehicles at 8:00 a.m. to 3:00 p.m. while many queens in Anrian are 37 vehicles at 13.00-14.00. For the average waiting time for GTO for 1.5 minutes in the queue and in the system for 2 minutes. The most number of vehicles waiting in the system for the GTO is 6 vehicles at 6:00 a.m. to 7:00 p.m. and 9 p.m. to 10:00 p.m. while many queues in anrian are 5 vehicles at the same time.

Keywords: A queue, sistem, model, steady state, toll roads