

ABSTRACT

The provider of the toll road is one of the industries that are important to the economy of a country. The existence of the highway, would facilitate the mobility of people. The development is not limited to vehicles resulting in a queue in the road toll, especially during payment transactions. Queues also occurred in Bandung which has five toll booths that Pasteur, Stone Fruit, Kopo, Pasir Koja and Moch. Toha. The purpose of this study is to determine the performance of the system queues at the toll gate 5 during peak time and determine the cause of system performance is less than optimal queue at one of the toll booths during peak time.

There are several variables in the queuing system among others (P_0) there is a probability 0 vehicles in the system, (W_q) the length of vehicles waiting in the queue, (W_s) the length of vehicles waiting in the system, (λ) the number of vehicles per unit time, (L_s) the number of vehicles the average in the system, (L_q) the average number of vehicles in the queue and (ρ) utility substitution. The analysis method used in this research is the analysis method that measures the performance of the standard formula queue and assisted with POM for Windows applications and use fishbone diagram to determine the cause of the queue. This study uses data outgoing traffic volume per hour and the speed of data transactions substitution exit at the toll gate 5 Bandung in April 2015.

Results from this study showed that the results of the comparison showed that the toll gate Stone Fruit is a gateway queue system performance level is not optimal compared with the other four toll booths. With the results of the calculation are the Stone Fruit (P_0) 0.3, (ρ) 43%, (L_s) 1.79 vehicles, (L_q) 0.08 vehicles, (W_s) 5.24 sec and (W_q) 0.24 seconds , Analysis of the causes of sub-optimal performance of the system queues at toll gates Stone Fruit is damaged substitution devices, the old transaction services, motorists are less educated use of e-toll, the arrival of many vehicles, the use of conventional substations and land availability are not able to accommodate the arrival of the vehicle.

Keywords: fishbone diagram analysis, system performance analysis of queuing, queuing system.