UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

COMPARISON ON QUEUING PERFORMANCE MEASURES ON CUSTOMER'S FLOW USING QUEUING THEORY MODEL AND DSW ALGORITHM

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

Servers at service counters use a queuing system all over the world. However, the issue frequently arises when customers must wait in line for an extended period. A queuing system is a process for measuring a model's efficiency by underpinning queue model concepts. The primary objective of this study is to compare the performance indicators of a queuing system at LHDN service counters and to determine customer flow using the Queuing Theory Model and Fuzzy Queuing Model. The values of arrival rate, λ and service rate, μ is obtained from the data collected from the system at the LHDN service counters and will afterward be used to calculate the variables in the Queuing Theory Model and Fuzzy Queuing Model. In this study, the DSW Algorithm is used for the α-cut process to define the required variables for the Fuzzy Queuing Model. A model is developed in queuing theory to predict queue lengths and waiting times. The obtained results for both models are equivalent. The Queuing Theory Model's calculated performance measures are within the range of the Fuzzy Queuing Model's computed performance measures. The Fuzzy Queuing Model, on the other hand, illustrates that the model is far more efficient and effective than the Queuing Theory Model. The reason is that it is simpler to understand and comprehend the information acquired from the fuzzy application because it is in the form of a range between minimum and maximum. As a result, the Fuzzy Queuing Model is the greater alternative method for measuring the performance of a multi-server queuing system.