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Optimizing Number of Effective-Efficient Counters Using Poisson Queuing Model

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Train is the most preferred public transport in urban area. However, passengers are often delayed by ineffective and inefficient counter services. They often have to queue to buy a ticket. The purpose of this study was to optimize the number of effective and efficient counters at a train station. Specifically, this study attempted to identify the optimal number of opened counters at one time and to determine the minimum time taken for a passenger to buy a ticket. To achieve both objectives, the researcher has chosen to apply Poisson Queuing Simulation (PQ) to the Morning Shift (MS) and Evening Shift (ES) data at a train station. When the interval was capped to 25 minutes (the upper time limit for passengers to catch the morning train), the total time taken by passengers in three MS queues were 16.80 minutes, 14.70 minutes, and 12.60 minutes, respectively. Therefore, the optimal number of counters to be opened was 1 counter. Total time taken for three ES queues were 28.51 minutes, 20.18 minutes and 17.58 minutes respectively. Hence, a maximum of 2 counters were needed for the ES if the number of passengers were to exceed the normal flow. Based on these findings it is recommended that KTMB analyses the number of passengers using their stations to determine the optimal number of opened counters for all stations.

Keywords: Optimization, Poisson Queuing Simulation, Public Transport, Queuing, Train

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