

ABSTRACT

Rizki Laundry is a micro, small, and medium enterprise (MSME) engaged in the laundry service industry, facing challenges in managing the increased volume of laundry that exceeds their daily capacity. As customer demand continues to rise, maintaining operational efficiency at Rizki Laundry becomes increasingly important. This study aims to address these issues through a systematic approach. The theory utilized in this research is queuing system theory and the simulation method based on Discrete Event Simulation (DES). This model is relevant as it can simulate systems that evolve over time, such as the dynamic laundry process. DES simulation was chosen for its flexibility in representing real systems with fewer simplifying assumptions. Additionally, this simulation allows for sensitivity analysis and the ability to predict how the system will behave under various operational conditions. Flexsim, the simulation software used, enables visualization in the form of 3D animation, making it easier to observe operational processes more realistically. The research methodology involves collecting operational and structural data from Rizki Laundry, which is then processed and integrated into the simulation model. Data collection was conducted through direct observation over eight working days, including data on inter-arrival times, process times, and machine capacity. The simulation model was then built using Flexsim based on the data obtained. The model was verified and validated by comparing the simulation results with real data and conducting statistical tests using the Welch test to ensure the model's accuracy. The simulation results demonstrate that implementing improvement scenarios, such as increasing machine capacity and optimizing process flow, significantly reduces queue times and enhances Rizki Laundry's operational efficiency. Implementing these solutions not only helps to reduce queue times but also improves customer satisfaction and the company's competitiveness in the market. The implications of this research underscore the importance of adaptive operational management in responding to increasing demand.

Keywords: *Queue Time, Discrete Event Simulation, Flexsim*