No 1(iv)

Simulation Report of the Checkout Process

Methodology:

This simulation modeled a checkout process in an e-commerce store with one cashier and one line of customers. The simulation was conducted using MS Excel, with 50 replications of 20 customers over 3 hours. Inter-arrival times were uniformly distributed between 1 and 15 minutes, and service times were uniformly distributed between 1 and 8 minutes. The simulation calculated two key performance measures: average customer time in the system (W) and proportion of time the server is idle (1-ρ, through using the following;

Inter-arrival time

Arrival time

Service time

Service start time

Service end time

Time in the system

Idle time

Results:

Average customer time in the system (W): 4.65 minutes

Proportion of time the server is idle (1-ρ): 35