**Simulation Methodology**

This study employed a simulation approach to investigate customer service processes, capturing key parameters for each customer, including interarrival times, arrival times, service durations, waiting times, and total time spent in the system. The simulation methodology involved the following steps:

1. **Interarrival and Arrival Times**: Customer arrival times were determined by summing their interarrival time and the arrival time of the preceding customer. Interarrival times were recorded sequentially as each customer arrived at the service point.
2. **Service Start and End Times**: The service start time was calculated based on the customer's arrival time or the server's availability. If the server was idle, service began immediately upon the customer's arrival. Otherwise, the service start time was delayed until the server was free. The service end time was determined by adding the service duration to the start time.
3. **Waiting Time and Time in System**: A customer's waiting time was computed as the difference between the service start time and their arrival time, applicable only if the customer had to wait for service. The total time spent in the system was the sum of the waiting time and the actual service time.
4. **Idle Time**: Server idle time was tracked whenever there was a gap between the completion of one customer's service and the beginning of the next. This idle period reflected when the server was not actively engaged in servicing customers.

**Performance**

1. **Average Time in System**: This measure indicated the average duration customers spent from their arrival to the completion of their service, providing insight into the overall service process efficiency and customer experience.
2. **Server Utilization**: Server utilization referred to the proportion of time the server was occupied. It was calculated as the complement of the idle time ratio, representing the effectiveness of the service process in maintaining a continuous flow of customers.

**Results Summary**

1. **Customer Service Data**: The total waiting times recorded across customers exhibited variability, suggesting potential bottlenecks or fluctuations in the efficiency of the service process. Some customers experienced significantly longer waiting times, potentially due to server downtime or periods of high customer demand.
2. **Average Time in System**: The average time customers spent in the system ranged between 4.45 and 8.15 units, based on the data provided (referenced in Sheet 2). This variation indicated inconsistencies in service experiences among customers, likely attributable to fluctuating demand levels or disparities in service duration.
3. **Server Utilization**: The analysis revealed that the server's idle time ranged from 31% to 50%, highlighting a considerable opportunity for optimization. This variability in idle time suggested inefficiencies in scheduling or customer flow, which could be mitigated by improving the coordination between customer arrivals and service availability.

**Conclusion**

The simulation results indicated that while the system functioned effectively in many cases, there were periods of high waiting times and significant server idle times that pointed to inefficiencies. Reducing idle times through optimized scheduling or adjusting service strategies could enhance overall server utilization and customer satisfaction. Further analysis is recommended to identify specific interventions that can address these bottlenecks and variability in service times