**Summary of Results:**

1. **Average Time in the System (W):**
   * The simulation reveals varying average times customers spend in the system, ranging from 4.10 minutes to 11.30 minutes.
   * The overall mean of the average time in the system across multiple replications was calculated.
2. **Percentage of Idle Time (1 - ρ):**
   * The percentage of idle time for the checkout clerk was also calculated, showing a range between 15.00% and 76.67%.
   * The overall idle time percentage indicates the efficiency of the system. Higher percentages indicate that the clerk was idle for a significant portion of time.

**Methodology:**

1. **Simulation Design:**
   * **Interarrival and Service Times:** The simulation started with customers arriving at the system at different intervals. The interarrival times are modeled as the time difference between successive arrivals.
   * **Service Times:** Upon arrival, each customer spends some time in service. The service start time and end time were recorded, which allowed for calculating the total service time for each customer.
2. **Time in System Calculation:**
   * This was calculated by finding the difference between the time of arrival and the time of service completion for each customer.
   * The simulation aimed to capture the variability in the time each customer spends in the system based on the interarrival and service times.
3. **Idle Time Calculation:**
   * Idle time was recorded as the difference between the end time of one service and the start time of the next.
   * The simulation tracked the percentage of idle time across multiple replications to evaluate the utilization of the checkout clerk.
4. **Multiple Replications:**
   * The simulation was run multiple times to capture a wide range of outcomes. For each replication, average time in the system and percentage of idle time were calculated.
5. **Analysis:**
   * The results from multiple replications provide insights into the system's performance under different scenarios. This analysis allows the identification of potential bottlenecks or inefficiencies, such as excessive idle time or long wait times for customers.