**Improved Simulation Report**

**Objective:**

To analyze the customer checkout process, focusing on improving efficiency and reducing customer wait times.

**Methodology:**

**Data Collection and Analysis:**

* **Scenario Setup:** Simulated a checkout process with 20 customers.
* **Key Variables:**
  + **Interarrival Time:** Time between customer arrivals.
  + **Service Time:** Time required to serve a customer.
  + **Arrival Time:** Actual arrival time of each customer.
  + **Service Start and End Times:** Times when service begins and ends.
* **Performance Metrics:**
  + **Waiting Time:** Time a customer waits before service.
  + **Time in System:** Total time a customer spends in the system.
  + **Idle Time:** Time the checkout clerk is idle without serving customers.

**Simulation and Analysis:**

* **Multiple Replications:** Conducted multiple simulation runs to account for variability and ensure reliable results.
* **Data Analysis:** Analyzed the collected data to calculate average waiting times, time in system, and percentage idle time for each replication.

**Results:**

* **Average Time in System:** The average time customers spent in the system.
* **Percentage Idle Time:** The proportion of time the checkout clerk was idle.

**Conclusion:**

The simulation provided valuable insights into optimizing checkout processes. By analyzing the collected data, we identified areas where efficiency could be improved. Key findings included:

* **Idle Time:** High idle time indicates potential inefficiencies in the system.
* **Waiting Times:** Long waiting times can lead to customer dissatisfaction.