**REPORT OF E-COMMERCE PROCESS AND COVERS SIMULATION OF THE CHECKOUT PROCESS**

**Introduction**

This report is an overview of the evaluation of the checkout process in a small online gift shop based on the simulation conducted. The ultimate goal of the research is to find out the average time spend by customers in the system and the percentage of time the cashier is not engaged in customer service.

**Methodology**

Microsoft Excel was used to simulate the process. The following steps were followed:

**1. Assumptions**

Interarrival Times: The time interval between the customer arrivals is distributed uniformly between 1 and 15 minutes.

Service Times: The time needed to serve each customer is uniformly distributed between 1 and 8 minutes.

The simulation was orchestrated for 20 customers over a certain time of 3 hours (180 minutes).

**2. Simulation Setup**

Columns Created: The spreadsheet had the following columns, Among the following Arrival Time: The time at which each customer arrives. Interarrival Time: The time between the arrivals of consecutive customers. Service Time: The time taken to serve each customer. Departure Time: The time at which each customer leaves the checkout Time in System: The total time each customer spends in the system. Server Busy: A binary indicator of whether the server is busy or idle.

Arrival Time: The time at which each customer arrives.

Interarrival Time: The time between the arrivals of consecutive customers.

Service Time: The time taken to serve each customer.

Departure Time: The time at which each customer leaves the checkout.

Time in System: The total time each customer spends in the system.

Server Busy: A binary indicator of whether the server is busy or idle.

**3. Data Generation**

Random Values: To generate the interarrival times using the formula =ROUNDUP(RAND()\*14+1,0), will produce values which are in the range between 1 and 15 minutes. Similar, the service times are calculated from the formula =ROUNDUP(RAND()\*7+1,0), which leads to values between 1 and 8 minutes.

The interarrival times were generated using the formula =ROUNDUP(RAND()\*14+1,0), yielding values between 1 and 15 minutes.

The Service times are being generated via the formula =ROUNDUP(RAND()\*7+1,0), and the values range between 1 and 8 minutes.

Arrival Times: The arrival times were calculated cumulatively based on the interarrival times.

Departure Times: Departure times are the maximum time of the current arrival time and the prior departure time, plus the service time.

**4. Performance Measures Calculation**

Average Time in System: Obtained with =(Time in System).

Proportion of Time Server is Idle: Calculated using =1 - AVERAGE(Server Busy).

**5. Replications**

Furthermore, to improve the reliability of the results, the simulation involved a trial on 50 occasions using the Excel Data Table. Every single trial was unique, thus, the comparison of holstering process variations in a much more detailed way.

**Results**

Following is the result of running the simulation for 50 replications:

Average Time in System: 15.78 minutes

Proportion of Time Server is Idle: 34.12%

These findings show that on average, it takes 16 minutes for customers to check out while the server is idle for about 35% of the time.

**Conclusion**

The simulation of the checkout process offered important details of user behaviors and servers in e-commerce gifts shops. The period customers are in the system on average and the server's idle time are two significant aspects that can sound-out decision making and operation planning. These outcomes will give managers the chance to see more comprehensive customer service, faster transactions, and better utilization of store resources. In future simulations, it would be interesting to explore other possibilities, such as different customer volumes, or service times, in order to be more precise and effective in implementing operational strategies.