Data Modeling & Simulation

Optimizing Concert Ticket Booking Systems: A Simulation-Based Approach

By :

Al Fitra Nur Ramadhani

202210370311264

Data Modeling & Simulation B

Optimizing Concert Ticket Booking Systems

Key Insights into Ticket Booking System

- **Problem Statement**

  High demand during peak sales leads to long waits and cancellations.

- **Simulation-Based Approach**

  Using SimPy to analyze system performance under varying conditions.

- **Number of Servers**

  Testing configurations with 2, 4, 6, and 8 servers for performance.

- **Simulation Duration**

  The simulation runs for 480 minutes (8 hours) to gather data.

- **Sales Phases**

  Includes presale, peak, and normal phases to reflect real-world scenarios.

- **Performance Metrics Overview**

  Evaluating metrics to assess system performance during sales.

- **Total Customers**

  Measures the total number of customers participating in the simulation.

- **Customers Served (%)**

  Percentage of customers successfully served during the simulation.

- **Customers Canceled (%)**

  Tracks the cancellation rate to identify service issues.

- **Average Wait Time**

  Calculates the average wait time experienced by customers.

- **Average Service Time**

  Measures the average time taken to serve each customer.

- **Average Time in System**

  Tracks the total time customers spend in the system.

- **Average Queue Length**

  Assesses the average number of customers waiting in line.

- **Server Utilization**

  Monitors how effectively servers are utilized during sales.

Simulation Results and Analysis Overview

Analysis of customer service performance metrics

Number of Servers	Total Customers	Customers Served (%)	Customers Canceled (%)	Avg. Wait Time (min)	Avg. Service Time (min)	Avg. Time in System (min)	Avg. Queue Length (customers)	Server Utilization (%)
2 Servers	1171	366 (31.3%)	788 (67.3%)	11.31	2.61	13.94	26.26	99.69
4 Servers	1122	683 (60.9%)	435 (38.8%)	4.87	2.62	7.50	17.73	93.27
6 Servers	1134	857 (75.6%)	272 (24.0%)	3.54	2.64	6.20	14.78	78.68
8 Servers	1143	949 (83.0%)	191 (16.7%)	2.27	2.72	4.99	9.89	67.12

Conclusions

Key strategies to enhance booking performance and customer satisfaction