The relationship between unit production time and cumulative number of units essa...

According to Chase, Jacobs, and Aquilano (2006), a learning curve is a line displaying the relationship between unit production time and cumulative number of units produced (p. 135). Any business environment on individual or organizational level can benefit from using the learning curve. Additionally, " learning curve theory is based on three assumptions:

1. The amount of time required to complete a given task or unit of a product will be less each time the task is undertaken.

2. The unit time will decrease at a decreasing rate.

3. The reduction in time will follow a predictable pattern" (Chase, Jacobs, Aquilano, 2006, p. 135).

Pizza Store Layout Simulation

The path to a successful and lucrative business involves finding the correct formula that would calculate how to decrease losses and maximize sales. Mario's Pizzeria store layout simulation required the class to take a position of a restaurant manager and decide how to increase current profitability. The third assumption of the learning curve, " the reduction in time will follow a predictable pattern (Chase, Jacobs, Aquilano, 2006, p. 135), applies to this weeks assignment the most. A manager should always consider operational characteristics such as the line length, the number of customers in the restaurant, the waiting time spent in the line, the total time spent in the restaurant, and the service facility utilization (University of Phoenix, 2002).

Performance Metrics

| | Groups | Groups | Balked 2/4 | Avg. wait | Avg. queue | Profit | Lost sales | |

| of 2 | of 4 | | | | | | | | Week 1-2 | 71 | 105 | 2/38 | 11. 64 | 3. 13 |$1, 033 |$1, 170 | | Week 3-4 | 70 | 106 | 6/14 | 5. 99 | 2. 55 |$1, 498 |$510 | | Week 5-6 | 70 | 106 | 6/11 | 4. 52 | 2. 53 |$1, 571 |$420 | | Week 7-8 | 96 | 143 | 9/18 | 3. 49 | 2. 84 |$2, 050 |$675 |

Table 1. Simulation Results

Table One with the simulation results from Mario's Pizzeria scenario shows how with time operational decisions influence the key metrics: wait time, queue length, profit, and lost sales. Week Three-Four. The simulations required deciding how many tables for the groups of two and four, the wait staff, and the kitchen staff Mario's Pizza needs so it would stop losing customers, decrease the wait time, and increase the profit. Originally the restaurant had 14 tables for four and no tables for two, and the number of balked customers consisted of the groups of four. By changing the distribution of tables and establishing precedence rule the restaurant reduced the wait time in half and enjoyed a $1. 498 profit. However, the restaurant still was lost 20 groups, as they could not wait 5. 99 minutes, and the restaurant lost potential $510 in sales. Week Five-Six. Next the Mario's Pizzeria manual oven broke down, and the manager has a obvious opportunity to increase productivity of the kitchen by purchasing the Plax ovens.

In addition to one Plax ovens, the manager decided so purchase one Menu Point system, which should decrease the wait time. As a result, the wait time and the queue length have been reduced significantly. The profits increased, while the lost sales decreased. Week Seven-Eight. The restaurant manager is now must make a decision how to address the increasing number of

customers. He can either rent the bakery next door Cream Puffs or establish a Take Out counter. The manager made the most profitable choice and rented the bakery next door. Although the wait time significantly decreased, and the profits jumped up to $2, 050, the restaurant lost 36 groups, which translates into $675 in sales. Alternative Process. When analyzing the performance data and the restaurant capacity it is apparent that there is room for further improvement. When Mario's Pizzeria rented next-door Cream puffs it had to increase the number of the wait staff, kitchen staff, and buy another Plax oven. Utilization of the last two components is only at 58. 33%, by opening a Take Out counter the restaurant will take advantage of the unutilized potential of the kitchen staff and the oven which will result in increased sales, and possibly reduce the number of the lost customers.

Conclusion

The Mario's Pizzeria simulation demonstrated the learning curve theory that was conducted over the eight-week period. The numbers in Table One illustrate how the learning curve affects to the Mario's Pizzeria layout reorganization. One must remember that managing wait lines, is not about shorter or longer queues, but about maintaining a balance between the demand for service and the capacity of the system to provide service (University of Phoenix, 2002).

References

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