ABSTRACT

Many retail stores, as well as other organizations that employ a multitude of part-time employees, rely on developing schedules frequently, since the availabilities of the employees as well as the needs of the business change often. This process is often performed on a weekly basis, and is complex and time-consuming. The schedule must typically satisfy numerous requirements, including business needs, legal restrictions, and employee availability constraints. As a result, errors are common, and employee time that could have been spent on improving sales or operations is instead consumed by the scheduling task.

This project explores two solution methods for this problem. One method is the use of linear programming (LP) to develop an optimal schedule weekly. The other is the design and implementation of a scheduling system that uses a heuristic method. After developing both methods it was determined that while the LP approach may lead to optimal solutions, it was impractical due to high costs and complexity. The heuristic approach resulted in an automatic scheduling system that is easy to use, low cost, and flexible. The new scheduling system was evaluated and approved by future users.