

# **Optimizing Distribution Routes for Beverage Distribution Company**

## **Case Example - Overview:**

This business case focuses on optimizing the distribution routes for a beverage distribution company, Reyes Holdings, LLC, which handles both beer and soft drinks. The company has noticed inefficiencies in its current routing and delivery schedules, leading to increased fuel costs, delayed deliveries, and a lack of capacity utilization on certain routes. By optimizing these routes, Reyes Holdings, LLC aims to reduce costs, improve delivery times, and increase the number of cases distributed per route.

## **Problem Statement:**

Reyes Holdings, LLC operates several distribution routes that serve both urban and rural areas. However, the following issues have been identified:

- Overlapping routes are causing delivery delays.
- Inconsistent case volumes on different routes, with some trucks underutilized and others overloaded.
- Rising fuel costs due to inefficient route planning.
- Customer dissatisfaction due to late deliveries.

## **Objectives:**

1. **Improve Route Efficiency:** Reduce the overlap of routes and optimize delivery paths to minimize travel distance and time.
2. **Maximize Truck Utilization:** Ensure trucks are loaded closer to their maximum capacity on every route without exceeding weight or volume limits.
3. **Reduce Fuel Costs:** Lower the fuel consumption by minimizing unnecessary travel and optimizing delivery times to avoid peak traffic.
4. **Enhance Customer Satisfaction:** Improve delivery time windows and consistency for customers, which will boost client relationships and business reputation.

## **Scope:**

The business case will focus on the following areas:

- **Data Analysis:** Reviewing the delivery routes, case amounts, and customer locations for the past six months.
- **Optimization Model:** Implementing a route optimization model using logistics software or AI to recommend optimal routes based on demand, traffic patterns, and delivery windows.
- **Pilot Program:** Testing optimized routes on select high-volume routes to validate improvements before full-scale implementation.
- **Customer Feedback:** Collecting feedback from key customers to ensure service levels are met or improved during the trial phase.

## **Current Route Data:**

- **Route A (Urban):** Handles 1,200 cases of beer and 800 cases of soft drinks weekly. Average delivery time: 7 hours per day.
- **Route B (Suburban/Rural):** Handles 600 cases of beer and 1,000 cases of soft drinks weekly. Average delivery time: 9 hours per day.

- Route C (Urban/Suburban): Handles 700 cases of beer and 700 cases of soft drinks weekly. Average delivery time: 8 hours per day.

#### **Proposed Solution:**

1. Route Optimization Software: Reyes Holdings, LLC will invest in logistics software to model the most efficient delivery paths for each of its routes. The software will consider traffic, delivery windows, and demand patterns.
2. Balanced Case Distribution: Redistribute cases between trucks to ensure each vehicle is fully loaded without overloading and that high-demand areas are prioritized.
3. Centralized Warehousing: Explore the potential for a more centralized warehousing model, reducing the travel distance to key delivery areas.

#### **Cost-Benefit Analysis:**

- Cost of Software: \$50,000 for logistics software, plus \$10,000 annually for updates.
- Operational Costs: Estimated savings of \$20,000 per year in fuel costs due to more efficient routes.
- Labor Savings: Reduced delivery times will save an estimated \$15,000 per year in driver overtime costs.
- Increased Revenue: By improving customer satisfaction and delivery speed, Reyes Holdings, LLC expects to see a 5% increase in order volume, leading to an additional \$50,000 in annual revenue.

#### **Key Performance Indicators (KPIs):**

- Fuel Savings: Target a 10% reduction in fuel usage within the first six months.
- Truck Utilization: Aim for at least 90% utilization on all routes.
- Delivery Times: Reduce delivery times by 15% on optimized routes.
- Customer Satisfaction: Achieve a 10% increase in customer satisfaction scores after implementing the new routing system

## **Business Use Case Data**

- Upfront Cost \$50,000
- Ongoing Annual Cost \$10,000
- Time to Implement 317 Days (0.86 Years)
- Discount Rate 9%
- Estimated Revenue \$50,000
- Estimated Cost Savings \$35,000