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Optimizing Workforce Management: A Linear Programming Approach for ABLE Marketing Company**

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# **A blue and black logo Description automatically generated**

**Company background**

**Company Overview:** ABLE is a dynamic marketing company based in Gandhinagar, Gujarat, India, specializing in providing comprehensive 360-degree marketing solutions. Established with a clear vision, ABLE has emerged as a key player in the industry, catering specifically to Real Estate Developers.

**Mission and Vision:** The core mission of ABLE is to empower Real Estate Developers by offering strategic marketing solutions that alleviate the burden of sales management. The company envisions a future where developers can channel their energies solely into construction and quality enhancement, ensuring that their sales needs are seamlessly and professionally handled.

**Services:** At the heart of ABLE's success lies its unique approach to client service. Specializing in the Real Estate sector, the company excels in providing highly skilled Sales Executives to its clients. These professionals contribute to the smooth and efficient selling of inventory, allowing developers to maintain a singular focus on their core competencies.

**Clientele:** ABLE boasts a distinguished clientele, with major real estate builders placing their trust in the company's expertise. By forging lasting partnerships with key players in the industry, ABLE has become a preferred choice for real estate developers seeking top-notch marketing solutions.

**Employee Strength:** With a workforce of around 80 dedicated professionals, ABLE is committed to excellence in every aspect of its operations. The team comprises individuals with diverse skills and experiences, collectively driving the company towards new heights of success.

**Financial Performance:** ABLE has achieved remarkable success, reflected in its impressive annual revenue (turnover). As of the latest financial data, the company has established itself as a financially robust entity, contributing significantly to the growth and prosperity of its clients and stakeholders.

In essence, ABLE is not just a marketing company; it is a strategic partner for Real Estate Developers, offering unparalleled expertise and support to ensure the seamless advancement of their business goals. Through its commitment to professionalism, innovation, and client success, ABLE continues to shape the landscape of real estate marketing in India.

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**Problem Statement:**

During the next four months, ABLE must meet (on time) the following demands for Sales Executives: 20 in month 1; 30 in month 2; 15 in month 3; and 10 in month 4. At the beginning of month 1, ABLE has 10 Sales Executives on hand f. A Sales Executive is compensated $2000 per month. Each Sales Executive can work up to 160 hours per month before incurring overtime. They can work up to 20 hours of overtime per month and are paid $15 per hour for overtime labor.

It takes 10 hours of labor and $50 for additional resources (such as marketing materials, communication tools, etc.) to support the work of a Sales Executive for a month. At the beginning of each month, Sales Executives can be hired or fired. Each hired Sales Executive costs $2500, and each fired Sales Executive costs $1500. At the end of each month, a holding cost of $1000 per Sales Executive left unassigned to clients is incurred.

The goal is to use Linear Programming (LP) to determine the optimal staffing schedule and hiring/firing policy for Sales Executives while meeting the monthly demands and minimizing the total cost incurred by ABLE.

# **Model Setup**:

**Input**:

i: index for the month, {1, 2, 3, 4}

: Demand of each month i

: Exsist Sales in each month i

C: Compensated cost

H: Hiring cost

L: Layoff cost

U: Unassigned cost

O: Overtime cost

RHi: Regular work hour

OHi: Overtime work hour

**Decision:**

: number of executive compensated

: number of executive hire

: number of executive layoff

: number of executive unassigned

**Objective:**

min [[ +[

**Constraint:**

[Non-Negative]

0 [Non-Negative]

0 [Non-Negative]

0 [Non-Negative]

[Regular work hour + the Overtime Hours should meet the demand.]

**Solver Model :**

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A graph with numbers and a rectangle

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A close up of numbers

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**Our Recommendation to ABLE :**

Based on the optimized analytical decision model tailored for ABLE, we propose the following recommendations:

1. In the initial month, we advise recruiting an additional 10 executives to enhance operational efficiency.
2. For the subsequent month, consider hiring 7 more executives, resulting in the maximum executive count of 27 across the four months. This strategy aims to generate 420 hours of overtime with the existing executive team.
3. Unfortunately, due to fluctuations in demand, a workforce adjustment is necessary in the third month, involving the regrettable decision to lay off 12 employees.
4. In the final month, guided by prevailing market conditions, we recommend a workforce reduction of 15 employees.

Considering the fluctuations in hiring and firing, we suggest a more balanced approach. To navigate these fluctuations effectively, our recommendation is for ABLE to explore hiring executives on a contractual basis for specific projects. This strategy provides flexibility while ensuring the company's ability to adapt to changing demands without resorting to aggressive hiring and firing practices.