Jaypee Institute of Information Technology, Noida

Project Based Learning Semester 5

Dairy Delights

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1. Introduction

1.1 Business Overview

The chosen dairy business is a small-scale enterprise focused on the production and sale of two main products: **milk** and **paneer** (Indian cottage cheese). Dairy products like milk and paneer are staple foods in many households and are consumed daily, making this business model both essential and sustainable. The business operates within a local region, targeting households, small retailers, and local eateries as the primary customer base.

The primary goal of the business is to provide fresh, high-quality dairy products sourced and processed in a way that maintains nutritional value and taste. The production process follows hygiene and safety standards to ensure customer satisfaction and loyalty. As the demand for fresh, locally-sourced dairy products continues to rise, the business has the potential to grow by reaching more customers and diversifying its product offerings.

The market for milk and paneer remains steady due to their daily usage in homes and restaurants. Milk is a basic necessity, used in various forms such as direct consumption, tea/coffee, and cooking, while paneer is a popular ingredient in numerous Indian dishes, especially in vegetarian meals. The company has identified a growth opportunity by gradually expanding its production capabilities and distribution channels to meet increasing demand.

1.2 Project Objective

The main objective of this project report is to assess the financial health and long-term viability of the dairy business, focusing on profitability, cost management, and budgeting. This will be achieved through detailed financial analysis and projection techniques. By conducting these analyses, the business will be able to understand its current financial position, optimize resource allocation, and identify potential areas for improvement.

The report covers three core analyses:

1. **Cost-Volume-Profit (CVP) Analysis**:
    - This section will analyze the relationship between costs, sales volume, and profit to help understand how changes in sales volume impact the profitability of the business.
    - The selling price, fixed and variable costs, and break-even point will be determined, providing insights into the minimum sales level required to cover costs and achieve profitability.
2. **Activity-Based Costing (ABC)**:
    - This analysis will identify and allocate costs associated with various activities in the business. It provides a more accurate picture of the expenses related to producing milk and paneer by dividing costs into direct and indirect categories.
    - ABC allows for the allocation of indirect costs to each product based on relevant cost drivers, giving a precise view of per-unit production costs.
3. **Budgeting**:
    - This section focuses on developing a comprehensive budget plan for the business over the next three years, encompassing sales, production, operational expenses, and cash flow.
    - Key budgeting aspects will include a master budget, sales budget, purchase budget, operating expenses budget, and cash budget, all of which will project future growth based on assumptions about market trends, demand, and cost dynamics.

2. Cost-Volume-Profit (CVP) Analysis

2.1 Selling Price and Sales Estimates

The selling prices of milk and paneer are estimated as follows:

- **Milk**: Rs. 50 per liter, with an annual price increase of 5%.
- **Paneer**: Rs. 300 per kg, with an annual price increase of 5%.

Year	Milk Sales (Liters/Month)	Price per Liter (Rs.)	Paneer Sales (Kg/Month)	Price per Kg (Rs.)	Total Monthly Sales (Rs.)
Year 1	1,000	50	200	300	1,10,000
Year 2	1,100	52.50	220	315	1,27,050
Year 3	1,210	55.13	242	330.75	1,46,748.8

2.2 Fixed Costs

The monthly fixed costs for the dairy business include rent, salaries, utilities, marketing and maintenance. Assume the 5% growth annually.

Fixed Costs	Monthly Cost (Rs.)
Rent	10,000
Salaries	20,000
Utilities	3,000
Marketing	1,000
Maintenance	2,000
Total Fixed Costs	36,000

2.3 Variable Costs

The variable costs change with production volume, covering costs like raw materials and packaging per unit. Procurement costs increases by 5% annually and packaging cost remain constant.

Variable Costs	Cost per Unit
Milk (direct sales)	Rs. 25/liter
Milk for Paneer	Rs. 25/liter
Packaging	Rs. 2/unit

2.4 Break-Even Analysis

In this section, we calculate the break-even point, which is the level of sales at which total revenue equals total costs (both fixed and variable costs). At the break-even point, the business neither makes a profit nor a loss. This analysis helps understand the minimum sales volume required to cover costs.

Break-Even Formula

To calculate the break-even point in units, use this formula:

Break-Even Units = Total Fixed Costs / (Selling Price per Unit - Variable Cost per Unit)

Break-Even Calculations

1. **Milk**:
   - Selling Price = Rs. 50 per liter
   - Variable Cost = Rs. 25 per liter ○ Total Fixed Costs = Rs. 36,000 per month
2. Using the break-even formula:
   Break-Even Units (Milk) = 36,000 / (50 - 25) = 1,440 liters
   This means that to break even, the business needs to sell 1,440 liters of milk per month.
3. **Paneer**:
   - Selling Price = Rs. 300 per kg
   - Variable Cost = Rs. 250 per kg (assuming 10 liters of milk are used, costing Rs. 25 each)
   - Total Fixed Costs = Rs. 36,000 per month
4. Using the break-even formula:
   Break-Even Units (Paneer) = 36,000 / (300 - 250) = 720 kg
   Therefore, to break even, the business needs to sell 720 kg of paneer per month.

3. Activity-Based Costing (ABC)

3.1 Activities and Resources Identification

Key activities and resources required for production and selling milk and paneer:

Activity	Resources	Cost Type
Milk Procurement	Raw Milk	Direct
Processing	Labor, Equipment	Indirect
Packaging	Packaging Materials	Direct
Distribution	Fuel, Transportation	Indirect
Marketing & Sales	Advertising, Sales Channels	Indirect

3.2 Cost Driver Allocation

Cost drivers for indirect costs are assigned based on each activity's usage.

Activity	Cost Driver	Indirect Cost Allocation
Processing	Machine Hours	Rs. 15,000
Distribution	Fuel Consumption	Rs. 5,000
Marketing & Sales	Number of Ads	Rs. 5,000

3.3 Unit Cost Calculation Using ABC

Using ABC, we calculate the total cost per unit for milk and paneer, accounting for direct and indirect costs.

Product	Direct Cost (Rs.)	Indirect Cost (Rs.)	Total Cost per Unit (Rs.)
Milk (per liter)	25	5	30

Paneer (per kg)	250	15	265

4. Budgeting

4.1 Master Budget

Year	Total Sales (Rs.)	Total Cost (Rs.)	Fixed Cost (Rs.)	Variable Cost (Rs.)	Net Income (Rs.)
Year 1	13,20,000	13,60,000	4,32,000	9,28,800	-40,000
Year 2	15,24,600	15,24,780	4,53,600	10,71,180	-180
Year 3	17,60,985.6	17,14,041.60	4,76,280	12,37,761.60	46,944

4.2 Sales Budget

Projected monthly sales revenue:

Year	Monthly Sales Revenue (Rs.)
Year 1	1,10,000
Year 2	1,27,050
Year 3	1,46,748.8

4.3 Purchase Budget

Estimated purchase costs for milk based on production requirements.

Year	Monthly Purchase Cost (Rs.)
Year 1	75,000
Year 2	86,625
Year 3	1,00,051.875

4.4 Operating Expenses Budget

Annual operating expenses based on growth assumptions.

Year	Total Operating Expenses (Rs.)
Year 1	4,32,000
Year 2	4,53,600
Year 3	4,76,280

4.5 Cash Budget

Monthly cash flow estimation for Year 1 (example):

Month	Sales Revenue (₹)	Collections (₹)	Total Expenses (₹)	Cash Balance (₹)
January	1,10,000	66,000	1,13,400	-7,400
February	1,10,000	1,10,000	1,13,400	-10,800
March	1,10,000	1,10,000	1,13,400	-14,200
April	1,10,000	1,10,000	1,13,400	-17,600
May	1,10,000	1,10,000	1,13,400	-21,000
June	1,10,000	1,10,000	1,13,400	-24,400
July	1,10,000	1,10,000	1,13,400	-27,800
August	1,10,000	1,10,000	1,13,400	-31,200
September	1,10,000	1,10,000	1,13,400	-34,600
October	1,10,000	1,10,000	1,13,400	-38,000
November	1,10,000	1,10,000	1,13,400	-41,400
December	1,10,000	1,10,000	1,13,400	-44,800

4.6 Key Assumptions

- Sales growth: 10% annually. ● Price increase: 5% annually.
- Operating expenses increase: 5% annually.

- Assuming the Initial Cash Balance (staring in January) = Rs.40,000

5. Conclusion

Summary of Findings

The CVP, ABC, and budgeting analyses reveal that the dairy business can be profitable with effective cost management. The break-even analysis shows achievable targets for both milk and paneer sales, while the ABC analysis highlights the importance of indirect cost allocation.

Insights

- Cost management is critical to maintaining profitability.
- Annual increases in price and sales volume are necessary to cover rising costs.