TARGET COSTING

Project Design & Cost Management
Target Costing

“Target costing is a structured approach to determine the life-cycle at which a proposed product with specified functionality and quality must be produced to generate the desired level of profitability over its life cycle when sold at its anticipated selling price.”

Objective: “design costs out of products, not try to find ways to eliminate costs after products inter production.”

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Target Costing Process

- Define the Product
- Set the Target
- Achieve the Target
- Maintain Competitive Cost
TARGET COSTING

Target Costing Overview
DEFINE THE PRODUCT
DEFINE THE PRODUCT

- **Competitive Analysis**
  - Competitive Price and Feature
  - Competitor Cost Structure
  - Reverse Engineering

- **Customer Knowledge**
  - Quantifying Needs
  - Conjoint Analysis
  - Feature/Price Data
  - Attribute/Price Data

- **Marketing Research**
  - Provides quantitative info about customer needs/wants
  - Reveal unrecognized niches
  - Public Information
  - Analysts’ Reports

- **Product Planning**
  - Analyzing all three areas and determining what segment to concentrate on
DEFINE PRODUCT

Influencing factors in Defining the Product
SET THE TARGET
SET THE TARGET

- Establish Price
- Know Costs
- Determine Profit Margin
- Develop Subsystems
- Functional and Cross Functional Groups
SET THE TARGET

Setting the Target Overview

Inputs:
- Establish Price. Identify TC scope.
- Determine COGS Targets via Experience Curves, Reverse Engineering, Margin Req’ms, etc.
- Determine Engrg. & Installation Targets via Reverse Engineering, Margin Requirements, Best-In-Class Processes, ........
- Apply similar procedure to Mktg. & Sales, R&D, ........
- With these cost inputs and market requirements (e.g.: geographic) identify a best-case Supply Chain.
- Quantify the financial impact of this SC in terms of NPV and ROIC.
- Focus on what a Best-In-Class unconstrained competitor could do.
- Peer Review before completion.

Outputs:
- Establish Price. Determine Scope (COGS, E&I, SC, ...)
- Determine Engrg. & Instal’n. Target
- Determine Mktg. & Sales, General & Admin. Targets
- Targets for Cost Elements (product level)
- Targets for NPV, ROIC, Cash Flow, etc.
SET THE TARGET

• Establish Price
  • Based upon the information gathered when defining the product
  • Experience Curves

• Know Your Costs
  • Look at all factors significantly affecting product cost

• Determine Profit Margin
  • Corporate profit expectations
  • Competitive analysis
  • Historical results

Market Cost is a benchmark cost, cost for a comparable project

Allowable Cost is the maximum allowable cost to be financially feasible

Target Cost is equal to the Target Price minus the Target Margin
Influencing factors when Setting the Target

Market Research → Product Characteristics → Target Cost

- Target Price
- Required Profit
- Continuous Improvement
- Product Design

Less
SET THE TARGET

Subsystems
Subdivide the Target Cost of the product into subsystems

- If the Target Cost is far below the estimated cost
  - Is it fair to force each subsystem to equally reduce?
  - No, some subsystems are already as low as possible

- Target Cost of each subsystem linked to the customers’ “perceived value” of the features provided by each subsystem

- Basic rule is to only include features customers are willing to pay for

Process:

- Develop a list of features provided by your product

- Have customers rank them by their importance to the product (percentage)

- Multiply the importance percentage by the Target Cost and reveal the value of that feature to the customer

- Reveals the TC for each feature
# Subsystems

## Customer Feature Ranking Percentage

<table>
<thead>
<tr>
<th>Component</th>
<th>Brew Basket</th>
<th>Carafe</th>
<th>Coffee Warmer</th>
<th>Body/Water Well</th>
<th>Heating Element</th>
<th>Display Panel</th>
<th>Relative Feature Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tastes/smells like espresso</td>
<td>.5 × 20% = 10%</td>
<td></td>
<td></td>
<td></td>
<td>.5 × 20% = 10%</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Easy to clean</td>
<td>.3 × 16% = 4.8%</td>
<td>.1 × 16% = 1.6%</td>
<td>.6 × 16% = 9.6%</td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
</tr>
<tr>
<td>Looks nice</td>
<td>.6 × 8% = 4.8%</td>
<td></td>
<td></td>
<td></td>
<td>.4 × 8% = 3.2%</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>Has 6+ cup capacity</td>
<td>.5 × 12% = 6%</td>
<td></td>
<td>.5 × 12% = 6%</td>
<td></td>
<td></td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>Starts automatically on time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 × 16% = 16%</td>
<td></td>
<td>16%</td>
</tr>
<tr>
<td>Has multiple grinder settings</td>
<td>.05 × 4% = 0.2%</td>
<td></td>
<td></td>
<td></td>
<td>.95 × 4% = 3.8%</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Keeps the coffee warm</td>
<td>.2 × 12% = 2.4%</td>
<td></td>
<td>.8 × 12% = 9.6%</td>
<td></td>
<td></td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>Automatic shutoff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 × 12% = 12%</td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>CONVERTED COMPONENT</td>
<td>15.0%</td>
<td>10.0%</td>
<td>9.6%</td>
<td>20.4%</td>
<td>10.0%</td>
<td>35.0%</td>
<td>100%</td>
</tr>
</tbody>
</table>
**SET THE TARGET**

**Functional Teams (Core Groups)**
- Focus on reaching the cost target for each of the subsystems
- Each team must know the product TC and each subsystem’s TC
- Team sizes vary on complexity
- All work as one unit
- Experience shows benefit in including individuals outside the product or project
  - Provide Fresh Ideas
  - Better development and product road maps

**Cross Functional Teams**
- Develop initial product concept & test feasibility
- Steer the functional teams in the right direction
- Cuts time to market by reducing design reviews & engineering changes
- Maintains technical info and expertise that can be used to assist fictional teams
- Keep up with most recent developments and improvements
- Facilitates planning, design, and problem solving
ACHIEVE THE TARGET
ACHIEVE THE TARGET

• Compute and Decompose Cost Gap

• Perform Cost Analysis & Assign TC to Functional Teams (Core Groups)

• Achieve Target Costs
Compute and Decompose Cost Gap

- **Current cost estimate based on current cost factors**
- **Gap between current market cost and the allowable cost decomposed by:**
  - Life cycle
  - Value chain
- **Findings show firms which areas are in need cost reduction efforts the most**

- **Life cycle**
  - Total product cost broken up into categories from “birth” to “death”
  - Requires estimates from R&D, manufacturing, marketing, distribution, repairs and support, and disposal.

- **Value Chain**
  - Separates cost on whether incurred by firm or value chain member
  - Requires estimates from firm, suppliers, dealers, and recycler
ACHIEVE THE TARGET

Perform Cost Analysis

“Customers think in terms of features but products are designed in terms of functions and components.”

1. Identify features most desired by customers
   • Feature ranking method

2. Identify what functions make those features possible
   • Percentage of Contribution

3. Identify what components make up those functions
   • Multiply the TC per feature times the function contribution percentage to reveal the TC for each function (Functional Team)
COMPONENT TC

Customer Features
- Software executes rapidly
- Ample disk storage space
- Allows multi-tasking
- Screen refresh rate is fast
- Appearance (sleek vs. clunky)
- Runs graphics applications

Product Functions
- Microprocessor
- Power supply
- Case
- Memory
- Hard Disk
- Bus

Feature to Function Breakdown

Function Contribution Percentage

(Percent of total cost for each component)
ACHIEVE THE TARGET

Achieve Target Costs

- Each Functional Team (Cluster Group) has a TC for their subsystem
- All groups should collaboratively progress to obtain product TC goal
- “Good communications are essential”
- Cross-Functional Groups:
  - In charge of approving trade-offs between functional groups

Methods of Achievement:

- Value Engineering
- Big Room
- Co-Location
- Function and Component Analysis
- Design for “X”
- Supplier TC
Achieve Target Costs

Value Engineering

- **Functional Analysis**
  - Determine what function an item performs, what it cost, and what it is worth to the customer
  - Value Index : ratio of the degree of importance to percentage of cost
    - $VI > 1$ = enhancement needed, not spending enough on feature
    - $VI < 1$ = Value engineering needed, spending too much

- **Creative Thinking**
  - Brainstorming about cost reduction ideas for each function
    - Evaluated if it can be eliminated, simplified, or reduced while still delivering function

- **Analysis**
  - Ideas most likely to reduce costs identified for further study
    - Must be technically feasible and acceptable to a customer

- **Idea Development**
  - Convert ideas into concrete proposals for product or process changes
Calculating the Value Index

<table>
<thead>
<tr>
<th>Feature or Function</th>
<th>Component Contribution</th>
<th>Component Cost</th>
<th>Customer Ranking</th>
<th>Relative Importance (col. 2 * 4)</th>
<th>Value Index (col. 5 / 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Motor (75%)</td>
<td>$1.60 (40%)</td>
<td>4 (40%)</td>
<td>30%</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>Blades (25%)</td>
<td>0.80 (20%)</td>
<td>4 (40%)</td>
<td>10%</td>
<td>0.50</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Drawer (100%)</td>
<td>0.60 (15%)</td>
<td>4 (40%)</td>
<td>40%</td>
<td>2.67</td>
</tr>
<tr>
<td>Appearance</td>
<td>Casing (100%)</td>
<td>1.00 (25%)</td>
<td>2 (20%)</td>
<td>20%</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$ 4.00 (100%)</td>
<td>10 (100%)</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
ACHIEVE THE TARGET

Achieve Target Costs

Methods of Achievement

- Big Room
  1. Bring together all team members into large group settings
     • Facilitates discussion
     • Provides means of addressing progress on product level
     • Idea development

- Co-Location
  • Physically locate team members in the same area (office floor) during design
  • Enhances communication
  • Maximizes collaboration
  • Information travel saves time
  • No waste

2. Co-Locating teams
ACHIEVE THE TARGET

Achieve Target Costs

Function and Component Analysis

• Examine all parts and functions of each subsystem to reveal additional opportunities for cost improvement

• Subdivide down to the appropriate component level to obtain costs for each of the components

• Identify components that contribute to most cost
  • The function of each major component reveals opportunity for cost reductions
  • Excessive capabilities
  • Functional redundancy
  • Alternative sources
  • Commercial components over custom
ACHIEVE THE TARGET

Examine all areas of Product Stream
Achieve Target Costs

Design for “X”\textsubscript{2}

- Process that ensures the requirements of a specific product life-cycle stage/stages are addressed and satisfied

- A tool that can be used to help achieve the product’s TC, especially the full-stream costs

- Examples:
  - DFM = Manufacturing
  - DFI = Installation
  - DFR = Recycling
  - DFS = Safety

Supplier TC\textsubscript{2}

- Suppliers can help identify component or subsystem adding costs without significant benefit

- Alternative approaches with adequate capabilities at a lower cost

- Learn from suppliers and validate the targets and design choices you have made
MAINTAIN COMPETITIVE COST
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- Establish Cost Plan
- Monitor Progress
- Prepare to take Action
- Kaizen Mentality
MAINTAIN COMPETITIVE COST

Establish Cost Plan

- Plan developed from sum of sales in different regions
  - Account for each product's price trend and the required profit margin
  - Profit margins vary based on:
    - Customer
    - Region
    - Stage of life cycle of product

Monitor Progress

- Track actual costs in comparison to the cost plan
  - Must account for areas such as:
    - Changes in Volume
    - Changes in Mix
  - Other areas to monitor for costing purposes:
    - Spare parts
    - Options
    - Other low volume areas
Prepare to take Action

- Keep eye on market, competitor development, and product enhancements
- If actual costs are not meeting the plan, action must be taken to fix it
  - Identify root causes
  - Propose remedies
  - Implement improvements

Kaizen Mentality

- Develop and support culture that encourages continuous improvement
- Reward ideas that develop into practice
- Encourage employees to approach management with improvement ideas to save time & money, promote employee well being or improve the product
REFERENCES


