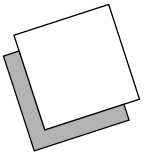

Target costing

Margaret L. Gagne and Richard Discenza

Product innovation is a key to survival

In today's rapidly changing business environment, product innovation is one of the keys to a company's survival and competitiveness. Manufacturers can no longer produce and market large volumes of standard products with a relatively stable market and technological climate. There has been a shift toward unstable, rapidly changing markets and technologies. To implement market-driven management across the organization, measurement and cost control systems must be designed to motivate the desired consumer-oriented behavior. The strategies that determine the direction of product innovation have become crucial to corporate management. Industrial marketers play a major role in product innovation, and cost accounting must support this role. Cost management methods must help with the production of new products which meet customer demands at the lowest cost, as well as with cost reduction of existing products by eliminating waste.

Management accountants have recognized that traditional methods (for example, standard costing) may not work well in the modern competitive environment and have responded. Traditional costing systems have been modified to promote automated factories, standardized parts and reduced lead times, all in an atmosphere of restructuring and globalization. Management accountants also need to modify cost methods to promote the successful introduction of new products. One of the ways they can do this is through target costing.

Target costing is an important area

Target costing represents one of the most important areas where marketing and accounting overlap. Briefly, with target costing, marketing and design functions identify a product's desired features and its likely selling price. Under the target cost system, activities are controlled by using a target, or a market-based allowable cost, that has to be realized if the firm is to be profitable. A desired profit margin is subtracted from the estimated selling price to determine the target cost for the new product. All members of the organization subsequently work to design and manufacture the product at the target cost.

Target costing: a market-driven management method

Target costing was invented by Toyota in 1965 (Tanaka, 1993). In Japan, management accountants have worked hard to link their product-costing systems to their companies' strategies for product innovation. Japanese companies seem to use these accounting systems to motivate employees to act in accordance with their long-term strategies rather than as a tool for providing senior managers with precise and detailed data on profits, standard costs and variances. Japanese accounting systems emphasize doing what it takes to achieve a desired performance level under market conditions. Management accountants help motivate market-driven behavior by using a market-based allowable cost that has to be realized if the company is to be profitable in a competitive market (Hiromoto, 1991). Under these

conditions, market prices critically influence a company's or a division's performance. Both the manufacturing and the marketing functions are encouraged to respond to market demand and competitive trends rather than merely focus on internal performance indicators. Under this approach, the marketing department is able to make product decisions without accepting costs as a given, which increases pressure on the sales force to operate within the parameters of the current market environment. Business as usual is not a major characteristic of target costing.

How is target costing implemented?

Establish a target selling price

The target costing process begins by establishing a selling price, based on market research, for the new product. From this target selling price, the desired (target) profit is subtracted to determine the target cost. In all likelihood, this target is below the company's current manufacturing cost. Teams from many departments then perform functional cost analysis in an attempt to reach the target cost. If the current cost estimate is at the target, the firm must decide whether or not to introduce the new product. If the current cost estimate is above the target, functional cost analysis is used to make changes and prepare another cost estimate.

As an aid to understanding, the target costing process is summarized in Figure 1. The following discussion is keyed to each step in the Figure.

Establish a target profit for the product

Marketing plays a crucial role in the determination of the target cost. The starting point for a target cost is the estimated selling price for the product determined by market analysis. Sales volume is also estimated and, from the total estimated sales revenue, the desired profit is subtracted. Management

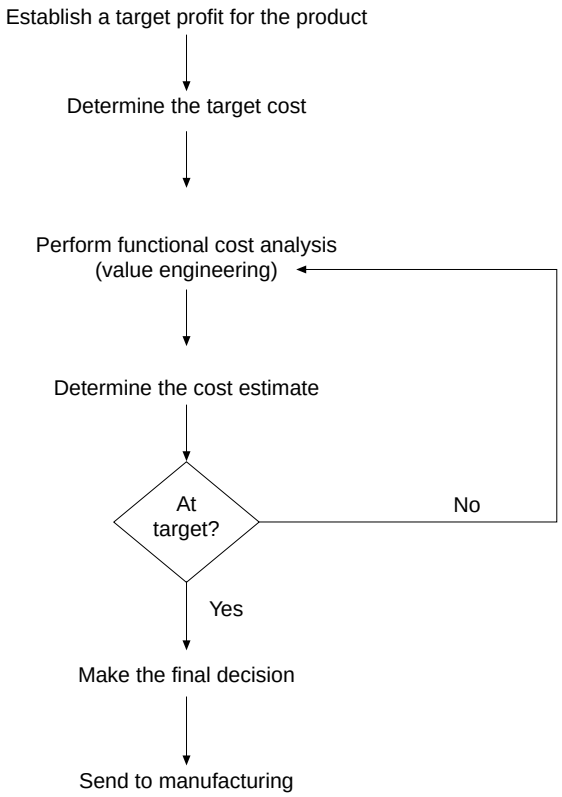

Figure 1. General summary of the target-costing process

determines this desired profit margin in reference to the company's long-term strategy. Retail prices and sales volumes are proposed by the marketing function based on its research and the company's desired market share. Total sales revenue for each new product over its life can now be estimated. The target profit, usually determined by using return on sales, is subtracted from the total sales revenue. The target cost is now determined.

Determine the target cost

Functional cost analysis is used

The target profit is subtracted from the target price to arrive at the target cost. Management accounting can play an important role in effectively determining target profits and target costs. Accountants can supply the information required to support a marketing analysis for a new product and relate it to existing products. After the target cost is determined by subtracting the target profit from the target price, functional cost analysis is used to achieve the target cost. Functional cost analysis is a group activity typically involving employees from different departments (such as marketing, design, engineering, production, purchasing, and accounting) and is aimed at proposing alternatives for reducing overall product cost.

This team-oriented approach requires that the employees of different departments bring together their knowledge and experience in the organization to contribute to the cost reduction process. Working with product designers, their motivation is not only to cut the number of parts but also to work toward the use of standard parts in designs that give products desired functions at a lower cost.

Characteristics of the best target-costing teams

Target-costing teams that function best have the following characteristics. First, employees that are assigned to these projects must have a basic understanding of how their work is translated into numbers that represent the firm's performance. For example, production managers rely heavily on direct performance indicators that employees can readily grasp and to which they can readily respond. Typical indicators are the time it takes to set up the manufacturing line to produce a batch of products or the amount of material that has to be scrapped because of worker error. Traditional measures that emphasize goals based on complex, financially-oriented yardsticks, such as return on investment, are incomprehensible to most workers.

Second, team members responsible for projecting and measuring product costs should not be narrowly trained individuals with no feel for the product and its market. The best team members are those individuals who have rotated through several departments, including design, purchasing and especially marketing, before being assigned to a cost-planning project. Broad backgrounds give team members a unique ability to spot and implement ways to reduce costs.

Perform functional cost analysis

Functional cost analysis requires the preparation of a logical diagram for each function of the product. It should be noted that this is not a diagram of each part of the product since it is the functions of a product that determine its success in the market. For example, Figure 2 shows the functional family tree for a desktop stapler. Each function of the product is defined in terms of a verb and noun with the primary function shown at the right being defined as "attach paper". The subfunctions, such as "put staple" and "hold stapling mechanism", show various operations of the product.

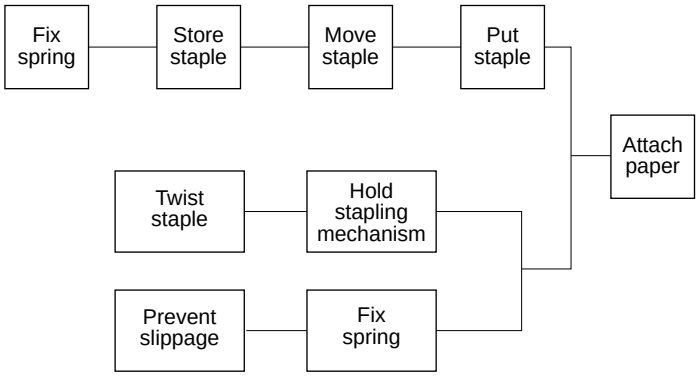

Figure 2. Desktop stapler functional family tree

Negotiations begin

Table I illustrates the links between the functions and the parts of the stapler, along with the applicable costs. Every part is treated as a component and each is assigned a target cost. This is where the negotiating begins. The negotiations may involve the company and its outside suppliers as well as the departments that are responsible for different aspects of the product. The total of the initial estimates may exceed the overall target cost by 25% or more. At the end of the discussion, compromises and trade-offs by the product designers, manufacturing engineering, and marketing specialists generally produce a projected cost that is close to the original target. Note that Table I provides the actual manufacturing cost for each function and parts required to carry out the function.

Management sets the target cost for each product under consideration. These costs may be derived from a purely technical assessment of the resources required, or a market-oriented perspective, or a combination of both. Market intelligence data are often used to help determine the target cost of each function. These combined estimates help determine the target cost for the product and should reflect the perceived importance by the customer. When

Function				Costs ($)		
Verb	Noun	Name	Part number	Part material	Purchased part	Labor
Fix	Spring	Slider	1		0.37	0.04
		Spring	2		0.21	0.08
Store	Staple	Track	3	0.48		0.12
Move	Staple	Spring	4	0.11		0.05
Put	Staple	Head	5	0.46		0.09
		Pin	6	0.26		0.03
Twist	Staple	Staple guide	7		0.72	
		Rivet	8		0.04	
Hold	Staple	Base	9	0.99		0.24
		Pin	10	0.15		0.05
Prevent	Slippage	Front pad	11		0.10	0.03
		Rear pad	12		0.11	0.03
Fix	Spring	Spring	13		0.07	0.10
		Rivet	14		0.06	0.02
		Base release	15		0.17	0.32
Individual totals				2.45	1.85	1.20
Total target costs					$5.50	
Target selling price					$9.00	

Table I. Target cost for the desktop stapler by functions, parts, and costs

actual costs exceed the market-oriented estimate, there is a need for modifications which may consist of alternatives for improvement. For example, a range of new materials or new parts may be considered or modifications to the function may be proposed in order to improve the value of the product to customers.

Value engineering

Functional analysis is closely linked to value engineering. Functional analysis is a cost management system that focusses on the various functions of each product. The individual functions of a product become the set of cost objectives and provide the basis for the costing system (Yoshikawa, *et al.*, 1990). Value engineering (VE) involves designing a product from different angles at a lower cost by reviewing the functions needed by customers. VE is used for purchasing, planning, design, production, and other processes on a company-wide basis. There is a variety of methods for conducting value engineering. The process generally starts with performance checks on test parts. Designs are changed to give each part a specific degree of performance. Then discussion turns to ways to cut costs while maintaining performance. The aim is to use the information provided by the functional analysis to propose alternatives for improving costs.

Determine the cost estimate

Functional analysis requires information concerning engineering specifications and accounting data. The actual manufacturing cost and the target cost for each product's functions are compared. Alternatives are identified to bring each function's actual cost estimate to its target cost.

Management accountants provide information on the cost effects of the proposed functional modifications. When needed, they prepare very detailed sets of cost tables that include the costs of alternative materials, of using different types of manufacturing technologies, and so on.

Compare estimate and target costs

Decision: is the cost estimate on target?

After the team consisting of members from the various functions of the company have used value engineering and functional cost analysis to determine the new product's estimated cost, the estimate is compared with the target cost. If the cost estimate equals the target cost, they move to the final decision. If the cost estimate exceeds the target cost, functional cost analysis is used again to reduce the estimated cost to the target cost.

Make the final decision

Once the cost estimates are on target, management makes the final decision to introduce the product based on manufacturing feasibility, market needs and consumer acceptability. If the decision is to go ahead with the product, manufacturing is instructed to proceed with production.

Once the decision has been made to manufacture the new product, however, there are other considerations necessary for successful implementation of the process. Since the target cost is often below the actual cost based on the current production technology (i.e. the standard cost), a team effort is required to enable the organization to achieve the target cost. Teams of people from marketing, engineering, purchasing, manufacturing, and accounting work together to assure that a cost position on the product is such that the company can sell the product at its required market price and make money doing it (Howell and Sakurai, 1992). Value engineering requires

access to many kinds of information found in various departments, so cooperation must be promoted.

Finally, target costing does not end once the decision has been made to move the product into the production stage. The standard manufacturing cost of the product depends on specific production line conditions. For example, production on lines below capacity pushes costs up, while production on lines near full capacity leads to the best cost performance. Often during the planning stage, it is difficult to visualize the line conditions and thus reflect accurately these conditions in cost estimates. Therefore, once the initial target cost has been calculated, the manufacturing division then initiates an effort to improve on the standard cost, in order to get it down to the target cost.

Successful applications

Managerial implications and recommendations

There are a number of companies which have begun to apply target costing with very favorable results. For example, it has been used by Chrysler Corporation which, thanks to a number of new products in the top range of their market segments, was expected to make as much money in 1994 as did all the Japanese automakers combined. The company includes suppliers in new product development from day one by listening to their suggestions for design improvements and cost reductions. In a further refinement, it has also replaced its adversarial supplier bidding system with a program that specifies suppliers for a component and then uses target pricing to determine with vendors the component prices and how to achieve them (Womack and Jones, 1994).

Should your company consider target costing? Companies which seem to benefit most from target costing are those which:

- are in assembly-oriented industries – as opposed to repetitive-process industries that produce homogeneous products;
- are heavily involved with the diversification of their product lines;
- use the technologies of factory automation, including computer-aided design, flexible manufacturing systems, office automation, and computer-aided manufacturing;
- have experienced shorter product life cycles where the payback for factory automation typically must be achieved in less than eight years;
- must develop systems for reducing costs during the planning, design and development stages of a product's life cycle;
- are implementing management methods such as just-in-time, value engineering, and total quality control.

A variety of factors are at work to promote the usefulness of target costing in other companies. First, products have shortening life cycles, so the design phase of a product is critical to managing costs. Manufacturing costs are driven primarily by the characteristics of the products and the processes used to manufacture them. Manufacturing processes are determined by the nature of the product and the expected volume to be produced. Therefore, to a great extent, costs are determined in the design stage (Howell and Sakurai, 1992).

Another factor which encourages the use of target costing is product diversity. The types of products manufactured by companies have increased rapidly in recent years. Target costing, in both the design and production stages, helps manage costs effectively. However, applying target costing in the design stage has the greatest cost reduction potential.

Product innovation is an important means of competing in the new global economy. Traditional cost management bases costs on given standards which tend to maintain the status quo. Target costing is dynamic, constantly pushing for improvement. Efforts to reduce cost at the design stage allow the marketing department to respond to customer needs without focussing on current costs. Using a target-costing approach, where marketing, accounting and manufacturing personnel work together to bring out products at competitive prices, should improve the overall product development process.

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