

# Target Costing, the Linkages Between Target Costing and Value Engineering and Expected Profit and Kaizen

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**Abstract:** Target costing is a pricing method used by firms. It is defined as "a cost management tool for reducing the overall cost of a product over its entire life-cycle with the help of production, engineering, research and design". A target cost is the maximum amount of cost that can be incurred on a product and with it the firm can still earn the required profit margin from that product at a particular selling price. In this article, financial expertise of thousands of teachers the period 2011-2012 was used to study the linkages between Target costing and Value Engineering and Expected profit and Kaizen. As the newest and most accurate method of target costing strategy can be very effective on corporate profitability and the factors discussed in the implementation of this method was considered to be controlled.

**Keywords:** Target Costing, Kaizen, Value Engineering, Expected Profit

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## 1. Introduction

Target costing involves setting a target cost by subtracting a desired profit margin from a competitive market price. [1, 2] A lengthy but complete definition is "Target Costing is a disciplined process for determining and achieving a full-stream cost at which a proposed product with specified functionality, performance, and quality must be produced in order to generate the desired profitability at the product's anticipated selling price over a specified period of time in the future." [3]

Kaizen costing is a cost reduction system. Yashihuro Moden defines kaizen costing as "the maintenance of present cost levels for products currently being manufactured via systematic efforts to achieve the desired cost level." The word *kaizen* is a Japanese word meaning *continuous improvement*. [4]

Value engineering (VE) is a systematic method to improve the "value" of goods or products and services by using an examination of function. Value, as defined, is the ratio of function to cost. Value can therefore be increased by either improving the function or reducing the cost. It is a primary

tenet of value engineering that basic functions be preserved and not be reduced as a consequence of pursuing value improvements. [5]

Target costing can be defined as a cost management tool for deducing the overall cost of a product over its entire life cycle with the help of the production, engineering, research and design, marketing, and Accounting departments. [7]

A comprehensive cost planning, cost management, and cost control concept... used primarily at the early stages of product design in order to influence product cost structures depending on the market derived requirements. The target costing process requires the cost-oriented coordination of all product-related organizational functions. [8]

### Target Costing Process

- Two stage process
- Establish the target cost
- Market research
- Product planning, concept development stages
- Achieve the target cost
- Value engineering, continuous improvement
- Design stage
- Continuous improvement in later stages

TC must be viewed as a broader concept that includes TC as well as other techniques inspired in Japanese cost management practices such as Kaizen cost management and FCA [9].

[10] argued that TC can be part of a wider concept of product cost management, called target cost management. In fact, [11] argued that TC should be used in a more “strategic” perspective and [12] presented Nissan’s “total cost control concept”, which is clearly a TC approach. These are different names for similar techniques which can be viewed as part of the same general approach.

[13] stated that in TC systems “Costs [which] are managed in three distinct ways [y]. Firstly, the mix of products that are manufactured and sold is strictly controlled by upper level management through the efforts of a multi-disciplinary team. Secondly, the costs of new products are reduced through the techniques of target costing and value engineering [which implies FCA]. Finally, the costs of existing products are reduced through the Kaizen system.”

Finally, it should be highlighted that these techniques associated with TC are examples of the Japanese concept of continuous improvement. TC means continuous [14] found a wide application of TC in the 1990s in several process industries but particularly in the assembling industry. According to some authors, more than 80% of the major companies in assembly-type industries have already adopted TC practices [15]. These practices are being applied in industries characterized by high levels of competition which demands continuous reductions of costs maintaining products’ standards of quality. For example, TC practices can be valuable for firms that operate in markets characterized by high value-added products because such products are associated with improvement in product development and design pro-sophisticated customers who distinguish and value differences and Kaizen, which follows TC procedures, means cost reductions in the manufacturing and delivery processes [15, 16]. TC is a technique for managing product costs during the design stage [17].

The use of some TC techniques is not correlated with NPD success. There are two extracted factors (Cronbach’s  $\alpha$  was 0.731) related to TC which were named “product level” and “component-level” TC [18]. Results suggest that some of the firms surveyed used TC to optimize production and technical features (components) and others to design competitive products in terms of quality and price but not both.

Firms that apply TC techniques without a “market perspective” are those which supply large firms. In these cases, suppliers use component-level TC in order to respond to clients’ downward pressures. In this context, TC is mainly used to deal with several feedbacks from the client in very iterative processes which characterize complex new products with a high level of complexity.

In general, suppliers are not able to manage products’ quality (presented as production requirements) and focus their efforts on functionality and price. The design of complex products asks for the redesign of parts or products

and many times for the inclusion of new or modified functionalities.

On the other hand, some manufacturing SMEs apply TC techniques from a much more “market perspective”. These companies have a focus on quality–price instead of functionality–price and do not develop so much complex products. Simpler products do not ask for constant redesign and intensive supplier–buyer activities.

These companies have a closer connection with the market and probably design new products which are sold directly to the customer. Thus, survey’s respondents (manufacturing SMEs) are not able to apply TC in very complex products simply because they do not produce such products. SMEs which are included in complex NPD processes are mainly suppliers of large and international supply chains.

Results demonstrate that only the product-level TC is correlated with NPD success. This means that, in this context, the use of TC improves firm’s results via the introduction of profitable new products. These companies apply TC because it contributes to the development of competitive new products. Product-level TC is related with the successful introduction of new products in the market and it is a relevant instrument for companies that develop such products. However, findings suggest that TC is particularly useful to improve NPD success when products are relatively less complex. In fact, in general, SMEs are not prepared to design very complex new products. Suppliers can be involved in the development of complex products which ask for the use of TC techniques from a “production perspective”. However, in these cases, component-level TC is imposed by the client or the nature of the industry. The use of component-level TC is thus not an option made by the company itself.

## 2. Research Hypotheses

Product improvement and the expected profit targets based costing purpose.

1. Target costing has a direct relationship with the customer.
2. Gap between current costs and expenses allowable costs related to the target image exists.
3. How to reduce costs related to product design, the product has a direct effect on target costing.
4. Kaizen costing, value engineering and achievable goal is directly related.
5. Product Lifecycle costs are directly related to the objectives.

## 3. Data Description

The primary steps in the target costing process are:

- (1) *Conduct research.* The first step is to review the marketplace in which the company wants to sell products. The design team needs to determine the set of product features that customers are most likely to buy, and the amount they will pay for those features.

The team must learn about the perceived value of individual features, in case they later need to determine what impact there will be on the product price if they drop one or more features. It may be necessary to later drop a product feature if the team decides that it cannot provide the feature while still meeting its target cost. At the end of this process, the team has a good idea of the target price at which it can sell the proposed product with a certain set of features, and how it must alter the price if it drops some features from the product.

- (2) *Calculate maximum cost.* The company provides the design team with a mandated gross margin that the proposed product must earn. By subtracting the mandated gross margin from the projected product price, the team can easily determine the maximum target cost that the product must achieve before it can be allowed into production.
- (3) *Engineer the product.* The engineers and procurement personnel on the team now take the leading role in creating the product. The procurement staff is particularly important if the product has a high proportion of purchased parts; they must determine component pricing based on the necessary quality, delivery, and quantity levels expected for the product. They may also be involved in outsourcing parts, if this results in lower costs. The engineers must design the product to meet the cost target, which will likely include a number of design iterations to see which combination of revised features and design considerations results in the lowest cost.
- (4) *Ongoing activities.* Once a product design is finalized and approved, the team is reconstituted to include fewer designers and more industrial engineers. The team now enters into a new phase of reducing production costs, which continues for the life of the product. For example, cost reductions may come from waste reductions in production (known as kaizen costing), or from planned supplier cost reductions. These ongoing cost reductions yield enough additional gross margins for the company to further reduce the price of the product over time, in response to increases in the level of competition.

The design team uses one of the following approaches to more tightly focus its cost reduction efforts:

- *Tied to components.* The design team allocates the cost reduction goal among the various product components. This approach tends to result in incremental cost reductions to the same components that were used in the last iteration of the product. This approach is commonly used when a company is simply trying to refresh an existing product with a new version, and wants to retain the same underlying product structure. The cost reductions achieved through this approach tend to be relatively low, but also result in a high rate of product success, as well as a fairly short design period.
- *Tied to features.* The product team allocates the cost

reduction goal among various product features, which focuses attention away from any product designs that may have been inherited from the preceding model. This approach tends to achieve more radical cost reductions (and design changes), but also requires more time to design, and also runs a greater risk of product failure or at least greater warranty costs.

Of these methods, companies are more likely to use the first approach if they are looking for a routine upgrade to an existing product, and the second approach if they want to achieve a significant cost reduction or break away from the existing design.

What if the project team simply cannot meet the target cost? Rather than completing the design process and creating a product with a substandard profit margin, the correct response is to stop the development process and move on to other projects instead. This does not mean that management allows its project teams to struggle on for months or years before finally giving up. Instead, they must come within a set percentage of the cost target on various milestone dates, with each successive milestone requirement coming closer to the final target cost. Milestones may occur on specific dates, or when key completion steps are reached in the design process, such as at the end of each design of iteration.

Though management may cancel a design project that cannot meet its cost goals, this does not mean that the project will be permanently shelved. Instead, management should review old projects at least once a year to see if the circumstances have changed sufficiently for them to possibly become viable again. A more precise review approach is to have each project team formulate a set of variables that should initiate a product review if a trigger point is reached (such as a decline in the price of a commodity that is used in the product design). If any of these trigger points are reached, the projects are immediately brought to the attention of management to see if they should be revived. Such a revival should take into consideration any changes in the market prices of comparable products since the project was last examined.

Target costing is most applicable to companies that compete by continually issuing a stream of new or upgraded products into the market place (such as consumer goods). For them, target costing is a key survival tool. Conversely, target costing is less necessary for those companies that have a small number of legacy products that require minimal updates, and for which long-term profitability is more closely associated with market penetration and geographical coverage (such as soft drinks).

The target costing concept has limited application in a services business where labor comprises the primary cost.

Target costing is an excellent tool for planning a suite of products that have high levels of profitability. This is opposed to the much more common approach of creating a product that is based on the engineering department's view of what the product should be like, and then struggling with costs that are too high in comparison to the market price.

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costing and Value Engineering and Expected profit and Kaizen.

Significance level for acceptance or rejection of the hypothesis:

Obtaining 60% of 100% Answer to options or too much.

Selling price – desired profit = target cost

Target Costing Characteristics

- Contradicts the traditional approach: design product, determine cost, set price
- Intense customer focus
- What do they want?
- How much will they pay for it?
- Can we make a profit on it?
- Want answers to these questions before committing to the project
- Cost control from the beginning
- 70-90% of costs are committed to at the design stage
- Focus on product and process design to engineer out costs from the beginning
- Saves costly changes later on
- Product, manufacturing process, delivery process designed simultaneously
- Ensures features customers demand, but within acceptable cost parameters
- Eliminates the temptation to add costly features
- Customers may not value the added features
- Forces consideration of manufacturability
- Reduces the need for subsequent changes
- Cost control at all phases of the product life cycle
- Design
- Production
- Delivery/setup
- Customer's cost of ownership
- Emphasizes future sales instead of current cost savings
- Service and repair
- Disposal and recycling

Total expected revenue throughout product life

Total desired profit throughout product life

Total target cost

## 4. Conclusion

In this article, financial expertise of thousands of teachers the period 2011-2012 was used to study the linkages between Target costing and Value Engineering and Expected profit and, Kaizen.

Hypothesis test results Question 1:

Given that 60% of respondents answered the item is too large, thus indicating that there is a relationship between customer orientation and cost target.

Hypothesis test results Question 2:

Most respondents to the many options and very high (approximately 70% of option too) so this hypothesis was confirmed.

Hypothesis test results Question 3:

According to the responses, most of the replies were too many options and therefore this hypothesis is confirmed.

Hypothesis test results Question 4:

According to the responses given hypothesis was confirmed. 100%

Hypothesis test results Question 5:

Nearly 70% percent is answered that many options can be concluded that the hypothesis is confirmed.

As the newest and most accurate method of target costing strategy can be very effective on corporate profitability and the factors discussed in the implementation of this method was considered to be controlled.

### ■ Positives

- Customer focus
- Cross-functional integration
- Open sharing of information
- Better process understanding

### ■ Negatives

- Too much customer focus
- Potential organizational conflict
- Too much pressure to attain targets
- Longer development times

*Figure 1. Organizational Impact.*

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