Titel: Characteristics of Target Costing as a Cost Management tool.

Scriptie voorgedragen tot het bekomen van de graad van:
Licentiaat in de toegepaste economische wetenschappen

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Stijn Loosveld, 02/05/2003.
Acknowledgements

Though the following thesis is an individual work, I could never have reached the heights or explored the depths without the help, support, guidance and efforts of a lot of people. Firstly I want to thank my parents for making my studies possible and for their never ending support.

Looking back on the last four years I must say I do not regret one single moment of it. Four years of studying applied economics at the University of Ghent. Four years in which professors and assistants tried to learn us something about all kinds of economic aspects. Every single one did this with a lot of passion and dedication for his or her subject. I want to thank all those people, they have done a great job.

I have always had a great affinity with accounting related subjects, so it was obvious that the subject of my thesis would go in the same direction. ‘Characteristics of Target Costing as a Cost Management Tool’ a sounding title that was suggested to me by Dr. Patricia Everaert. Special thanks goes to her. Her infectious enthusiasm and unlimited zeal have been major driving forces during the writing of this thesis.

I also want to thank all the persons who gave their full co-operation with the research of this thesis. Frankie Descamps, Bart Vandecappelle, Luc Sabbe, Laurent Vanthournout, Firmin Jonckheere, Marleen Rouges. Their contribution is highly appreciated.

I would also like to express my thanks and appreciation to my friends and fellow students. Over the past year they have been witness to the ups and downs of my thesis process and no one could ask for a better support in life than they have been to me.

Finally, and definitely not least, I want to thank my niece Anneleen Waeremoes, who had the pleasure of correcting the many spelling and grammatical mistakes in the first drafts of this thesis. Her contribution will be highly appreciated by all the people who will read this thesis. She has made it more fluent legible.

Zottegem, 20 april 2003

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<th>Full Form</th>
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<tr>
<td>ABC</td>
<td>Activity Based Costing</td>
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<tr>
<td>BAM</td>
<td>Bekaert Advanced Materials</td>
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<tr>
<td>CPDM</td>
<td>Collaborative Product Definition Management</td>
</tr>
<tr>
<td>Etc.</td>
<td>Etcetera</td>
</tr>
<tr>
<td>EVA</td>
<td>Economic Value Added</td>
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<tr>
<td>i.e.</td>
<td>Id est</td>
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<tr>
<td>IKM</td>
<td>Innovation – Kaizen – Maintenance</td>
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<tr>
<td>JIT</td>
<td>Just In Time</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>Ltd.</td>
<td>Limited</td>
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<tr>
<td>mm</td>
<td>Millimeter</td>
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<tr>
<td>N.V.</td>
<td>Naamloze Vennootschap</td>
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<tr>
<td>PU</td>
<td>Polyurethane</td>
</tr>
<tr>
<td>PVC</td>
<td>Polyvinyl Chloride</td>
</tr>
<tr>
<td>QFD</td>
<td>Quality Function Deployment</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>ROI</td>
<td>Return on Investment</td>
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<tr>
<td>SCORE</td>
<td>Supplier Cost Reduction Effort</td>
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<td>SURE</td>
<td>Substitute, Utilise, Reduce price, Eliminate</td>
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<tr>
<td>TQM</td>
<td>Total Quality Management</td>
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Introduction

The development of today’s global markets, the fast spreading use of the Internet, the European integration of markets, . . . . These are all events that contribute to the development of highly competitive and transparent markets. Sales prices are market driven, monopolistic or oligopolistic competition is becoming a relic of the past. Today sales prices are non-controllable for one single company. Hence, the company’s profitability is more and more dependent on the effectiveness of cost management. Costs are still controllable for companies, perhaps some are not aware of this. Cost management is like wringing out a wet towel. Even when the towel appears dry to touch we have to keep on wringing to extract even more. Cost management is a never ending ‘wringing-activity’. Target costing is a cost management tool that manages the cost of future products very effectively. The target costing concept itself is perhaps very simple and logical. A company calculates a target cost by deducting from the expected sales price a reasonable profit margin. The company has to ensure that the future product can be produced at the calculated target cost. This seems straightforward, but this is not the case. The target costing concept is totally different from the traditional mindset, where companies develop products, calculate the product’s costs, add a profit margin and then try to sell the product. On the contrary, a company has to work backwards from the market, and this is what target costing does. This thesis tries to contribute to a better understanding of the target costing concept and tries to clarify what its essential ingredients are. Essential ingredients which are translated into nine different characteristics of target costing.

Chapter one deals with the importance of creating cost awareness already from the early stages of the product’s life cycle. The methodology of the target costing concept is explained in chapter two. Target costing is only a part of an integrated cost management system. Other supporting techniques contribute to an effective use of the target costing concept. These supporting techniques are touched in chapter three. The deduction of the nine characteristics from published English literature can be found in chapter four. Chapter five consists of four case studies in which the occurrence of the characteristics in a real business environment is examined.
Chapter 1

Target Costing and Cost Management

1. Introduction.

Since price is market driven, the overall strategy of a company has become a cost reduction strategy. Prices are set by markets, so in order to ensure a healthy profit margin, costs have to be managed. Traditional cost reduction techniques try to reduce costs when the product enters the manufacturing phase. Far too late, would be the reaction of a company that uses target costing. Target costing already starts looking at the cost of a product in the product planning and concept design phase. The product life cycle of nowadays products also tends to become shorter. For traditional cost reduction techniques, a shorter product life cycle implies less time to find cost reduction opportunities. As a consequence, target costing becomes more important.

The second section deals with the cost commitment through the life cycle. Why is the cost reduction potential the highest in the early phases of the product life cycle? The third section explains further the meaning of cost management. The fourth and fifth section show where target costing has to be situated in time and in cost management. The sixth section elucidates which role target costing can play in today’s changing competitive environment where traditional generic strategies like cost leadership or a differentiation strategy are not appropriate to survive. The seventh section describes some other important characteristics of the current management accounting environment.

2. Cost commitment through the life cycle.

Fierce competition, low profit margins, no more first mover-advantages, low customer loyalty, high customer demands,…. These are all characteristics of today’s markets where our companies have to compete in with each other. Those intense competitive pressures no longer make it possible for a company to survive by focusing on technical differentiation alone. The emergence of global markets has shunted aside such an old-fashioned strategy as initially introducing new products to technophiles at high prices and then subsequently scaling up volume and lowering price to satisfy the demands of the more conventional customer. Also the existence of lean competitors means that copycat, me-too product versions can be out on the market in a matter of months. Companies understand that
products must be innovative, have high quality and low costs right from their initial launching. Otherwise lean imitators will swoop in and introduce their low-cost copycats.

How can a company retain its competitiveness in a market with that kind of characteristics? Of course, the solutions is not as simple as driving out costs from the companies’ production, marketing, and distribution activities. Why not? Today, the majority of the companies have already squeezed out the fat of the production system, via their ongoing just in time (JIT) and total quality management (TQM) initiatives. Moreover, the cost gains from achieving marketing and distribution efficiencies are substantially smaller than the cost gains achieved through better product planning and design.

Several authors argue that **up to 80 percent of the product costs are committed at the design stage**. Sakurai (1992, 3-2) even states that 100 percent of the product cost are determined at planning and design stages. Figure 1 shows the typical relationship between life-cycle costs and committed and incurred costs. In the design stage important decisions are made concerning material selection, production method, make or buy decision,…. All those decisions have a great impact on the costs of a product. However, figure 1 shows that most of the costs incur after the design stage, i.e. when the

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**Figure 1: Life-cycle Costs and Cost Commitment**

<table>
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<th>Source: Ansari et al (1997, 13)</th>
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*Characteristics of Target Costing as a Cost Management Tool*
product goes in production. There are time lags between designs about product design and their eventual impact on the recurring (operating) costs. **Cost causes and cost occurrences are separated in time.** Therefore, a company cannot focus only on cost reduction techniques that take the product design as given. The company has to be ‘*cost conscious*’ in every stage of the product’s life cycle. Any company cannot ignore 80%; **the product development stage is a real treasure island for cost reduction opportunities** (Kato, 1993, 35). Fisher (1995, 50) explains why such a high percentage of the costs are committed in the design and development stage. He says: “Given a high level of automation, most production costs are determined in the product planning and design stages, so reducing product costs dramatically in the production is difficult”. Automation has changed the cost structure of many companies, causing more costs to be fixed in the short run.

As already described above cost causes and cost occurrence are separated in time. Essentially, the operations people are dealt their cards from the product designers, and must make the best out of what may be a lousy hand. Hence, **after a new product is launched, the potential to reduce costs from the product’s perspective rapidly falls**. Managing the cost of existing products is actually code for being more efficient or cleverer with the processes that make the product. In some cases, unfortunately, managing these costs involves engineering and product design changes that are much more costly to effect after a product has been launched than in the preproduction stages of the product’s life cycle. The highest cost reduction potential lies in the first stages, and rapidly decreases in the following stages. The cost to change the product design are the lowest in the first stages and

![Figure 2: Cost reduction potential versus cost of change](image-url)

Source: Based on : Gary Cokins (2002, 15)
rapidly increases in the following stages. Hence, cost gains achieved in the earliest stages are substantially higher than in following stages. Figure 2 shows the interesting relationship between cost reduction potential and the cost of change in relation to the stages in the product’s life cycle.

3. Cost management.

Cost management is like wringing out a wet towel. The biggest reaction is obtained first, but we must keep wringing. Even when the towel appears dry to touch we must wring it to extract more (Yoshikawa et al., 1993, 4). A policy of systematically managing costs on a continuous basis can bring more stability, strength and growth potential to a business.

Effective cost management involves more than the reduction of product or service cost. It also includes the identification of opportunities where cost levels may be maintained, or even increased, in order to generate more profit. (Yoshikawa et al., 1992, 2-1). As a management strategy, cost management has particular attractions in markets where competition is intense. Since price increases are more difficult to achieve in these circumstances, so cost management can offer a more feasible and controllable option for improving profitability. Also the internet plays an important role. The internet has shifted the balance of power from suppliers to consumers, and companies that do not understand how to aggressively manage their costs to achieve acceptable profits will be at risk (Cokins, 2002, 13-14).

Everaert (2000, 8) describes cost management as a cost down mentality, i.e. the active and continuous search to reduce the total costs of a product throughout its entire life cycle, for producer and consumer, but without reducing its value for the customer. It is worthwhile stressing the following part of the definition: ‘reduce the total costs of a product throughout its entire life cycle, for producer and consumer’. So not only the costs of the producer are important, also the consumers’ viewpoint requires a lot of attention.

Following Monden and Hamada (1991, 16), companies need total cost management because most of the costs in the production stage are determined in the stage of new product development and design. The total cost management in this context implies cost management in all phases of product life, and the involvement of all people in all departments throughout the company. Traditional cost management focuses too much on cost control in the production stage. Instead cost management methods must be useful both for the production of new products which meet customers’ demands at lowest cost, and for cost reduction of existing products by eliminating waste. A similar reasoning can be found by Mikado (1989, 3-4), who says that cost management’s first step is to reduce the cost level itself by improving design and production techniques while still at the design stage of products and
production processes. This activity is called **cost reduction**. The next step is to control production activities by applying the standards established in the first step. This activity is called **cost control**.

Also Fisher (1995, 52) makes the same distinction. Companies emphasize cost reduction at the product planning and design stages, and cost maintenance (or cost control) at the production stage. So, cost reduction occurs primarily before production begins; afterward, a company can only maintain costs, not drastically reduce costs. Everaert (2000, 12) describes cost reduction and cost maintenance as follows. Cost reduction is the active search to diminish the upstream and downstream costs of a future product\(^1\) during the new product development stage. Cost maintenance is the active search to diminish the downstream costs of an existing product\(^2\), during the production and subsequent stages. To briefly point out what downstream costs and upstream costs are: downstream costs are all costs from the start of the manufacturing process whereas upstream costs are all costs before manufacturing starts. These costs include designing, developing and testing.

### 4. Brief situation of Target Costing in time.

Toshiro Hirotomo’s often-cited Harvard Business Review article entitled ‘Another Hidden Edge – Japanese Management Accounting’ appears to be the first English written article to feature target costing. Target costing (or in Japanese ‘Genka kikaku’) is the name mostly used to refer to the concept that Toshiro Hirotomo described in his article. However, many consider target costing to be a misnomer. **Target costing is much more than just a mere costing system. Rather it is a comprehensive product planning and control process, which also includes a costing element.** Therefore, the name target cost management is often used. Or like Pierce (2002, 32) puts it, target costing used in conjunction with a variety of other tools geared towards continuous improvement, quality management and elimination of non-value added activities, represents a comprehensive and strategically focused approach to cost management. Embedded in this broader context, the target costing concept is therefore more correctly described as target cost management. Nevertheless, in this thesis the name target costing will be used instead of target cost management.

While the literature only began recognising target costing in the late 1980s, the concept itself has been around much longer. The first forms of target costing concept date from the early 1900s and were found in the Ford Motor Company. Another company, Toyota, for instance, was using target costing as early as 1963. And this date is often referred to as the ‘beginning’ of target costing.

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\(^1\) Future products = products of which the design stage is not finished  
\(^2\) Existing products = products of which the design stage is finished
5. **Situation of Target Costing in cost management.**

Yoshikawa et al. (1993, 36) argues that **target costing is fundamental to effective cost management** because it translates the cost implications of the organizational objectives into managerial operational terms (in a way that is akin to management by objectives) and acts as a guide and motivator for much of the creative and innovative activity in an organization, including new product development.

Cooper (1996, 244) says that managing the cost of future products is more **feedforward oriented**, focusing on reducing costs through more efficient product design. Target costing, value engineering and inter-organizational cost management systems are examples of such feedforward oriented systems. Value engineering is used in the product design stage to find ways to achieve the specified functionality at the required standards of quality and reliability and at the target cost. To achieve the target cost without making sacrifices in product functionality and quality, interorganizational cost management systems are designed to create downward pressure on the entire supply chain. The objective of these interorganizational systems is to identify innovative ways to reduce the cost of the components supplied by the chain.

However, managing the cost of existing products is more **feedback oriented**, focusing on reducing costs via more efficient production. Product costing, operational costing and kaizen costing are a few examples of feedback oriented systems. Kaizen costing systems focus on making improvements to the production process of existing products. These improvements are designed either to increase the effectiveness of the production process in general or to reduce the costs of a specific product without altering its functionality. Product costing systems are used to report the cost of existing products so that their profitability can monitored. Using reported product costs, the company can begin the process of identifying products that require redesign or discontinuance or that should be the focus of a specific kaizen program. Operational control systems are used to monitor performance on the shop floor. They include techniques such as identifying responsibility centres, calculating variances, and providing feedback on performance.

A comparison can be made with the above mentioned terms: cost reduction and cost maintenance. Feedforward oriented systems are more suited for cost reduction and feedback oriented systems are more suited for cost maintenance. And that is also why target costing and kaizen costing often are handled together. **Target costing and kaizen costing are two totally different cost management techniques but they are very complementary.** Target costing focuses on cost reduction and kaizen costing on cost control. Above the distinction between upstream costs and downstream costs was also made. It is clear that target costing is an example of downstream cost management of future products.
Sakurai and Scarborough (1997, 5) say that there has been a change from the traditional ‘planning and control’ perspective to an ‘Innovation – Kaizen – Maintenance operating (IKM) doctrine’. The traditional planning and control prevails in environments with typical command – and – control orientation. Typical techniques in such environments are standard costing, operating budgets, variable costing,… . However, none of these techniques implies improvement in any business function because they do not incite employees to improvement. The techniques only plan and control activities. Here lies the main difference with the IKM operating doctrine. IKM is explicit purposive. But for what stands ‘Innovation – Kaizen – Maintenance’? ‘Innovation’ means that a basic responsibility of an employee is to develop innovative changes to products or production processes, by introducing for example new technology. ‘Kaizen’ is the employee’s responsibility for continuously improving current activities (continuous improvement). And ‘maintenance’ means the employee has responsibility for maintaining current standards in technology, business and operations. In this context, the traditional view (typical command – and – control orientation) of employee responsibility is maintenance, only one aspect of the IKM doctrine. What is the connection between IKM and target costing? As Sakurai and Scarborough (1997, 35) put it, target costing is the most important new Japanese cost management tools and it is used as main tool of innovation in the IKM management doctrine.

6. Why does a company need cost management?

Cooper (1996, 219) argues that effective cost management systems are developed in response to changing competitive conditions. Companies can no longer sustain competitive advantages by pursuing either a low-cost\(^3\) or a differentiation strategy\(^4\). Companies realize that a competitive advantage based on either low cost or product differentiation is likely to be short lived. Nowadays, competitors can move quickly to match new product offerings at competitive prices. Moreover, competitors will often supply new products with more advanced features, providing further challenges that require a company to respond. There are also a lot of imitators who bring me too products so rapidly that companies no longer have the time to build up some brand loyalty, establish a differentiated position or recover some of their development costs. Hence, companies become involved in continual head-on competition, which Cooper (1996, 219) calls a ‘confrontation strategy’. Perhaps, continual head-on competition asks a little more explanation. Companies who follows a differentiation or a low cost strategy are only occasionally confronted with head-on

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\(^3\) Low cost strategy (or cost leadership) = A generic competitive strategy whereby a company strives to be the lowest cost producer in the industry in order to satisfy customers who do not have such high demands for quality and functionality.

\(^4\) Differentiation strategy = A generic competitive strategy whereby a company strives to provide products to customers who demand high quality and functionality and are prepared to pay a premium price for this.
competition. For example, the cost leader is able to offer products that are low in price and functionality by developing a sustainable cost advantage. This ability allows the cost leader to avoid competition by saying, “Don’t compete with me. If you do, I’ll drop prices even lower and render you unprofitable.” Similarly, differentiators offer products that have higher functionality than the cost leaders but that sell at higher prices. They develop unique products or services that closely satisfy customers’ requirements, thereby isolating a section of the main market. This ability allows the product differentiators to avoid competition by saying, “This is my territory. I’m so good at what I do that attempting to compete with me is pointless.” In the eyes of the companies who follows a confrontation strategy there is no mechanism to avoid competition, they confront it and compete head on. These companies do not expected to achieve sustainable competitive advantages; rather, they expect to achieve transitory ones.

The basic thought of the confrontation strategy is that companies have to compete in terms of the ‘survival triplet’. The survival triplet consists of three dimensions that characterize a product: cost or price, quality and functionality. In this sense, quality is defined as conformance with product specification whereas functionality refers to the degree of success in designing the product to meet the specifications that customers require (Cooper 1996, 220). These three variables are not simple one-dimensional variables, but include additional factors. For example, functionality would also include design and appearance; cost (price) would include not only cost but also name recognition and appeal. (Creese, 2000, 2)

When a company wants to survive, in a confrontation strategy, it has to meet or even outclass its competitors’ performance on all three dimensions. Therefore, a company has to identify its ‘survival zone’. For each dimension a company has to identify a maximum feasible price/cost (or quality, functionality) and a minimum allowable price/cost (or quality, functionality). For quality and functionality, the minimum allowable level is the lowest value a customer is willing to accept. The capabilities of the company determine the maximum feasible values for quality and functionality. The price characteristic is slightly different from the other two in that the customer determines the maximum allowable price and the company determines the minimum feasible price. The survival triplet and the survival zone of a company are illustrated in figure 3.

The difference between the minima and maxima for each dimension bounds a range where a company has to compete in. When the survival zone is small, a confrontation strategy is necessary argues Cooper (1996, 220). Only when the survival zone is large, a low-cost or differentiation strategy can be successful. According to Cooper (1996, 220), ‘lean companies’ reduce the size of the survival zones

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5 Lean companies = Companies who follow the lean manufacturing philosophy, that is a manufacturing philosophy to shorten lead times and reduce costs by reducing waste and improving employee performance,
because of four primary characteristics they have in common. First, the lean companies are able to manufacture products at lower costs with higher quality than the mass production companies they are replacing. Second, lean companies can introduce new products more rapidly. Third, lean companies can make products economically in lower batch sizes than mass producers. Finally, lean companies are horizontally, not vertically, integrated. This horizontal structure blurs organizational boundaries, which makes it considerably difficult to keep technology innovation secret. Hence, competitive advantages based on superior technology are not sustainable. So when the survival zones are narrow the customers are unwilling to make significant trade-offs among the three dimensions. As a consequence, there is simply not enough leeway for a company to differentiate its products and sell them at a sufficient price premium to justify the increased costs.

So, the key to success in a confrontational environment is that attention must be given to all three items of the survival triplet and instead of concentrating on one of the three dimensions. Of course, it is not necessary or advisable to spend equal effort on all three dimensions of the survival triplet. Typically, one dimension dominates the other two. For example, in a market where the customer is demanding increased functionality and is willing to pay for it, the most important dimension is functionality. Similarly, when the market is price driven, then the critical skill is cost reduction. The rate of improvement in each dimension does not need to be the same, but too much effort cannot be spend on one dimension at the expense of the others. The rate of improvement has to be aligned with the importance of each dimension. But lets not forget the dynamic aspect, the survival zones are continually changing as improvements are continuously being made to increase functionality, quality and reduce costs. The most important dimension frequently changes over time, so companies have to be agile, have to be able to change rapidly between the different dimensions.

Nowadays, the question is how to get to the market with the right products having the right features and value at the right place, price, and time. Let us look at the extreme situation where the maxima and the minima of each dimension fall together, illustrated in figure 4. This situation would create a unique combination, one price that reflects a certain level of quality and functionality. In other words a company cannot change price without changing the level of quality or functionality. The dynamic aspect is of the outmost importance. This unique combination will only stand for a certain period. Technological evolution for example puts a downward pressure on the price (of products with older technology). Hence, profitability (and ultimately survival) becomes very sensitive to the effectiveness skills and satisfaction. (Creese, 2000, 1) Or like Cooper and Slagmulder (1997, 3) describe lean companies: At the heart of the lean companies is the belief that single-piece flow is more efficient than batch-and-queue. The removal of all the queues and other inefficiencies associated with batch-and-queues systems enables lean companies to have faster reflexes, to enjoy economies of scale at lower production volumes, and to be inherently more efficient than their mass producer counterparts. They can produce products with higher quality and functionality, at lower cost, more quickly. These increased abilities are natural outcomes of the single piece flow philosophy.
of cost management. Lowering costs is always a major means of achieving higher profits when the price is given. This is where target costing has an important role to play, i.e. managing the future cost of products very effectively. Or as Kato (1993, 36) puts it, target costing is not just a cost reduction technique; it is part of a comprehensive strategic profit management system.

Figure 3: The Survival Triplet

Source: Cooper 1996, 30
7. Other important characteristics of today’s management accounting environment.

Hirotomo (1991, 4) argues that today’s innovative management accounting systems are designed to support **continuous innovation**, which is a new common theme of management accounting systems design. Above we have already mentioned the change from the traditional ‘planning and control’ perspective to a ‘Innovation – Kaizen – Maintenance operating doctrine’. There are several characteristics of this new management accounting environment. Hirotomo (1991, 4) mentiones some characteristics, namely: **A Behavior Influencing Focus, Market-Driven Management and A Dynamic and Team-Oriented Approach.**

To briefly describe these characteristics: The primary concern of the behaviour-influencing approach is to design a system to **influence employees to perform the desired behaviour**. This system does not necessarily try to provide a true and accurate cost and an optimal solution, but allows employees to be creative and resourceful. The system is used to motivate employees to think and act strategically and to implement a chosen strategy. A company is often seen as an interface between technology and its market. Market driven management is a way of management thinking that gives **priority to market or customer requirements over technological limitations.** And so the company prevents that over
Characteristics of Target Costing as a Cost Management Tool

engineered products are being launched. A dynamic and team oriented approach requires that management accountants should facilitate bringing together all knowledge and experience in the organisation. This is in contrast with the baton-passing or sequential approach, where excessive specialization is omnipresent. As we move further in this thesis, these characteristics will be described more into detail.

However, the market driven management aspect will already be described in detail. Above, it has been described that competitive advantages based on superior technology are not sustainable. Products and services have to meet customers’ needs to be successful. Therefore, product development must be driven primarily by customers’ needs rather than by technological possibilities. This is a big difference between target cost environments and non target cost environments (or traditional environments). Butsher and Laker (2000, 49) uses the terms ‘inside-out approach’ for the traditional environment and ‘outside-in approach’ for a target cost environment. The inside-out approach can be described by the following characteristics (Butsher and Laker, 2000, 49):

- New product development is driven by what the engineers have developed, rather than by what the market demands.
- Prices are determined on a cost-plus basis, meaning that the target margin simply is added to the final cost of the product.
- The final cost of the product, though, cannot be established until the final product is ready to be launched.
- The customer’s voice is heard late – if at all – in the product development process, helping only to fine-tune the nearly finished product.
- Cooperation between engineers and marketers is minimal. The engineers develop a product; the marketers try to sell it.

This inside-out approach results in an array of overengineered products that do not match the customer requirements and are priced incorrectly. The outside-in approach, on the other hand, results in products that are not longer developed in accordance with technological possibilities, but instead in accordance with the market’s needs and at the highest price it will accept.

Traditional approaches uses all to easy a maximalisation strategy. Instead, they should try to identify trade-offs and try to optimize them. This is also the case in product development, what level of technological performance must a product have? How higher the level of performance how higher the cost will be. The same is true for the willingness to pay of a customer, the higher the level of performance the higher the customer’ willingness to pay will be. However, it is wrong to think that you have to maximise the performance level in order to maximise the willingness to pay and ultimately to maximise profit. Maximisation of the difference between the cost of the level of
technological performance and the willingness to pay (for that product or product attribute with a certain performance level) is the key to success. This is illustrated in figure 5.

Figure 5: Optimization of the level of technological performance.

![Diagram showing the optimization of technological performance level against perceived value/cost.]

Based on Butcher and Laker (2000, 50)

Figure 5 shows that the perceived value increases with the performance level, it does so at a decreasing rate. The perceived value reflects the customers’ willingness to pay. The higher the perceived value of a product, the more the customer is willing to pay for it. However, the additional willingness to pay for an improvement of the value through better performance decreases just as the marginal value decreases. Figure 5 also shows a cost curve that becomes steeper. Improving the performance from a high level is more expensive per unit than improving it from a low level. **The goal in target costing is now not to maximise the performance level, that leads to high cost, but to maximise the difference between value and costs, that result in an optimum.** When the performance level of a product is left from the optimum, it is beneficial to increase the performance level. The increase in costs is more than offset by the increase in perceived value. The same is true when the performance level of a product is at the right of the optimum, then a decrease in performance level is beneficial. The decrease in perceived value is smaller than the decrease in costs. Or as like Maskell (2000, 50) puts it, thanks to target costing (the outside-in approach) the company understands
Chapter 1 Target Costing and Cost Management

the value it provides to the customer, often for the first time, and how the customer perceives that value. It is important to mention that this is not a static optimization. Static optimization is often irrelevant. Technological progress has become a matter of days and months in this age of continuous innovation. This dynamic aspect has constantly to be reckoned with.

Above a distinction has been made between the inside-out approach and the outside-in approach. A comparable distinction has been made by Hiromoto. Hiromoto (1991, 7) identifies also two practises, namely a market-driven practise and a technology-driven practise. The first one, market-driven practise can be compared with the outside-in approach and the other, technology-driven practise can be compared with the inside-out approach. A technology-driven system, commences with existing and currently developing technology and looks for its possible commercial use, given its current cost. Design comes before major effort at cost reduction in contrast to a market orientated approach where cost reduction is built into the earliest possible stage of design when it is still possible to make major modifications and affect costs before there is commitment to them.

The technology-driven practise is also mainly adopted in the West whereas the market driven approach hand is mainly adopted in the East (Japan). Are their some elements that influence the kind of approach company use? Are there specific influencing elements in the West and in the East, that push western companies to use a technology-driven approach and eastern companies to use a market-driven approach? Oldman and Tomkins have made an attempt to classify companies into four types. To this end they use a 2*2 matrix, which Oldman and Tomkins (1998, 4) call ‘a simple four state cost reduction model’, with on one axis ‘strong turnaround need’ and ‘no turnaround need’ and on the other axis ‘strong market-orientation’ and ‘weak market-orientation’. This matrix can be found in figure 6.

![Figure 6: A simple four state cost reduction model.](source)

<table>
<thead>
<tr>
<th></th>
<th>Weak market-orientation</th>
<th>Strong market-orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No turnaround need</strong></td>
<td>Continuous Process Improvement</td>
<td>Continuous Market Innovation</td>
</tr>
<tr>
<td><strong>Strong turnaround need</strong></td>
<td>Product Pruning</td>
<td>Radical Innovation</td>
</tr>
</tbody>
</table>

Source: Oldman and Tomkins (1998, 4)

The cells reflecting the combined states of the independent variables can be interpreted as four cost reduction archetypes. Oldman and Tomkins (1998, 5) argues that in each state the company will formulate a specific strategy. In order to support that strategy they need specific financial analysis tools, that can be appointed to each state. The authors propose the following:
Characteristics of Target Costing as a Cost Management Tool

The category **Product Pruning** is the archetypical Western company in a turnaround position. Companies are looking to harvest cash flows where it could in order to survive. In this case, companies are primarily process orientated, have mature products with long product life cycles and, through its tight financial situation, are looking to limit investment. Companies might well be using activity based costing (ABC) as a strategic tool to help them prune their product lines. The tools of continuous improvement, kaizen or the more focused improvement approach as offered by the theory of constraints, would not be in use. *There may be some occasional use of something similar to target costing to confirm the cost of a product, but the full application of the target costing philosophy in determining strategy is not expected*, nor its incorporation of serious functional costing within a vigorous value engineering context.

The category **Radical Innovation** would also be experiencing problems in trying to turn its business around, but would be trying to approach the problem in a more innovative manner. It would have perceived that its products were mature and that a simple pruning process was not going to leave it in a profitable position. It would have bitten the bullet in the sense that it was prepared significantly to change its tack and invest. There would be a need for investment funds, but the developments would need to be focused and investment constrained given the financial position. The difference between this category and the Product Pruners would be that these were looking to invest, whereas the Product Pruners were not. *Under this scenario, some of the elements of target costing could be used*, introductory applications of kaizen and or theory of constraints would only be introductory if at all as the focus was more on quickly innovating out of trouble rather than expecting this to be achieved through continuous cost reduction. There would, possibly, be some use of ABC as a tool to confirm that costs of future products were properly understood. This category may also use value analysis; value engineering; and quality function deployment.

Companies in the position of **Continuous Process Improvement** would not be in a turnaround situation, but would still be process focused. They would be looking to undertake investment to maintain processes, rather than innovate. They would have medium to long product life cycles and relatively low funds requirements. Companies would place considerable reliance on kaizen or theory of constraints. They might use ad hoc ABC calculations to support these continuous improvement techniques, but in general, ABC is not expected to be used. *They would not use Target Costing as a regular system, but it might use it at very irregular intervals at the end of product life cycles.*

Finally, the category **Continuous Market Innovation** referred to those companies that found themselves in perpetual confrontation as Cooper (1996, 219) proposed. *Target costing with all its different facets would be a continual way of life in such an organisation.* Kaizen or theory of constraints might be used, but would not contribute more than a small proportion of cost reductions or
product attribute improvements that would come mainly through design changes. It is also possible that, in the West, companies in this category would have a strong forward looking philosophy and employ shareholder value analysis to cement that within the organisation. ABC, if it were used, would be used within the target costing system to ensure that projected overhead costs were accurately specified when design changes were considered. Oldman and Tomkins have by means of case studies investigated this four step model. They have come to the conclusion that there is a convergence towards the Continuous Market Innovation model.

8. **Summary.**

The **product development stage is a real treasure island for cost reduction opportunities** (Kato, 1993, 35). If 80 percent of the product costs are committed at the design stage, **companies have to be cost-conscious in every stage of the product life cycle**. Target costing, as an example of downstream cost management of future products and as part of a comprehensive strategic profit management system, tries to reduce costs at the beginning of the product life cycle.

It is important to note that here cost management is meant to illustrate the idea that successful competition is not simply about having the lowest costs. Instead, **success depends on having the right quality, functionality and costs.** In other words, delivering high value for the customer. Cost management should be continuous and should be an integrated activity throughout the whole life cycle of an organization’s products or services. **Effective cost management involves more than the reduction of product or service cost.** The identification of opportunities where cost levels may be maintained, or even increased, in order to generate more profit is also included. (Yoshikawa et al., 1992, 2-1). The company has to ensure that the quality and functionality of every product feature is in relation with its cost. **Overly engineered, gimmicky product features that provide insufficient customer value must be assiduously avoided.**

Sakurai and Scarbourgh (1997, 5) say that there has been a change from the traditional ‘planning and control’ perspective to an ‘Innovation – Kaizen – Maintenance operating (IKM) doctrine’. Target costing is the most important new Japanese cost management tool and it is used as **main tool of innovation in the IKM management doctrine.**

Cooper (1996, 220) argues that lean companies reduce the size of the survival zones, so cost leadership or a differentiation strategy are not appropriate anymore and **a confrontation strategy becomes a necessity.** Companies become involved in continual head-on competition. Since prices are market driven, profitability becomes very sensitive to the effectiveness of cost management. And **this is what target costing does, managing the cost of future products very effectively.**
Hirotomo (1991, 4) mentions some characteristics of today’s management accounting environment, namely: A Behavior Influencing Focus, Market-Driven Management and A Dynamic and Team-Oriented Approach. Oldman and Tomkins (1998, 4) have made an attempt to classify companies into four types. Those four types are ‘Product Pruning’, ‘Radical Innovation’, ‘Continuous Process Improvement’ and ‘Continuous Market Innovation’. Specific financial tools can be appointed to each type. In the category continuous market innovation target costing will be used with all its different facets. Oldman and Tomkins have also come up with the conclusion that there is a convergence towards the continuous market innovation model.
Chapter 2
Target Costing Process

1. Introduction.

Because this thesis aims to identify the most common characteristics of target costing, the examination of the target costing process itself is indispensable. Fisher (1995, 53) points out two distinct phases in the target costing process. The first phase involves the calculation of the target cost (along with target selling prices, target volumes and estimated costs). This phase is necessary to determine the cost reduction targets. This phase will typically be concluded in the product-planning phase. The second phase focuses on achieving the target cost through product design.

Chapter two has a similar construction. The second section (similar to the first phase as Fisher (1995, 53) has pointed out) deals with the calculation of the target cost. This second section consists of two smaller subsections. The first subsection describes in detail the use of the deductive method in setting the target cost. The expected selling price and the target profit margin are important inputs in the deductive method. The second subsection describes the adding up method, a second possible method to set a target cost. The third section points out the importance of feedback information and more particularly cost estimation. The fourth major section elaborates on the cost reduction objective, the way it is calculated etc. The fifth section describes several ways of filling the cost gap. The sixth and final section deals with transmitting the competitive cost pressures in the supply chain. The third to the sixth sections are similar to what Fisher (1995, 53) has identified in his second phase.

2. Calculation of the target cost.

It goes without saying that one of the main goals of target costing consists of coming up with a specific target cost at which a product must be produced in order to give the company a reasonable profit on mid-term basis. Cooper and Slagmulder (1997, 74) call the calculation of the target cost (or allowable cost as they call it) also market driven costing. They argue that market driven costing transmits competitive pressures from the marketplace to the company’s product designers and suppliers. There are two important methods to calculate the target cost of a product, i.e. the deductive and the adding up method. The dominant method is the deductive method. Bayou and Reinstein (1997, 32) give two reasons why the deductive method is superior to the adding up method. First, the deductive method connects the product’s target cost to the target profit set by top management.
Second, the deductive method fits better with the mechanism of value engineering\(^6\), which depends on this connection of costs to preset profit targets. The adding up method owes its popularity to the simplicity, in contrast to the deductive method. Yoshikawa et al (1993, 46) give also a third method of setting the target cost. This third method is called the integrated method. The integrated method combines the adding up method (which is based on existing technology and capabilities) and the deductive method (which is based on the market approach). The integrated method involves a process of negotiation once the results of the deductive and adding up method are available. The basic idea is that the integrated target cost should provide a reconciliation of the two methods and give a resultant target, which is set from a long-term point of view. Because the integrated method is based on the adding up and deductive method, only those two methods will be explained further in detail.

### 2.1. Deductive method.

The basic idea of the deductive method is simple (Kato 1993, 38):

\[
\text{Target Cost} = \text{Expected Selling Price} - \text{Target Profit Margin.}
\]

The company must work backward from the forces of the market and consumer preferences. They are the ultimate drivers of demand and revenues. With target costing, a company can work backward to determine the new product’s most desirable cost, based on customer and competitor

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\(^6\) Cooper and Slagmulder (1997, 129) give the following definition of value engineering: Value engineering is a systematic, interdisciplinary examination of factors affecting the cost of a product so as to devise means of achieving the specified purpose at the required standard of quality and reliability at the target cost. Value engineering will also further be explained in chapter three, supporting techniques.
Chapter 2 Target Costing Process

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factors (Cokins, 2002, 14). This viewpoint is consistent with the deductive method. Figure 8 illustrates the elements and sequence that are typical for the deductive method.

The target costs are calculated by deducting the target profit margin from the target selling price. In order to use this method, two important elements have to be reckoned with, namely the target selling price and the target profit margin. Those two elements will be explained more in detail the next two subsections.

As already mentioned the calculation of the target cost is also called market driven costing. Market driven costing focuses on the customers and their requirements and uses the target cost to transmit the competitive pressure in the market to the product designers and suppliers. Information on customer requirements can be obtained from customer surveys, market forecasts, research studies, comparisons with competitors, and other systematic methods. Quality Function Deployment (QFD), for example, is a systematic process to examine whether product characteristics satisfy specific customer requirements.

Figure 8: Elements and sequence of the deductive method

Source: Gary Cokins (2002, 16)
2.1.1. Expected selling price.

The expected selling price is the starting point for target costing activities. Important to realize is that the selling price is a reflection of a certain level of perceived quality and functionality of a product through the eyes of the customer, see also figure 4 in chapter 1. Customers will not be able to specify a meaningful selling price if the product’s functionality and quality are not defined adequately. Perceived value is not the only factor that influences the expected selling price. Availability of competitive products and their perceived value is another important factor. A company can raise the selling price only if the perceived value of the new product exceeds not only that of the predecessor, but also that of competing products. Or as Cokins (2002, 16) puts it customers are shoppers, and especially today the Internet is providing the customers with capabilities and automated services to more effectively shop and compare. The selling prices and perceived value of competitor alternatives and even functional substitutes must, therefore, be considered. Also market share and probable sales have to be guesstimated. In order to determine the product’s ability to absorb overhead and a reasonable share of general administrative costs.

The strategies of key competitors are of the outmost importance. Before a company introduces a new product, for example, the company predicts the competitive moves that their competitors will make. Other factors such as the company’s image, general market conditions,… are also important. Hence, a company has to take multiple factors into consideration in order to set a realistic selling price. Given the wide range of factors involved, the setting of the expected selling price (and not only expected selling price, also target profit margin, target cost,….) must be a participative effort involving representatives from production, engineering, design, marketing,….

Some structure in all those factors that influence the target selling price is not superfluous. A distinction that can be made is between internal and external factors. Internal factors mainly consist of the strategic decisions made by a company. Target selling prices are established within the context of the company’s long-term sales and profit objectives. The target selling price must take into account the market share the company wants the product to achieve, its profitability objectives, and the image the company is trying to project via its products. Obviously, the lower the selling price, the higher the market share, but decreasing the selling price below a certain point will lead to reduced profitability even though sales are higher. Therefore, the selling price also has to accommodate the long-term objectives of the company. If the company is trying to establish an image of its products as being high value, then the selling price might be lowered to strengthen this image. In contrast, if the image is one of technological superiority, then the price might be increased. Thus, target selling price reflects a

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7 Example: plastic instead of glass
Chapter 2 Target Costing Process

trade-off between these three strategic objectives (profitability, market share, image). It is clear that these decisions, these long-term plans have to be developed with great care. The credibility of these long-term plans is very important in the calculation of the target cost. The external factors are for example customer loyalty, the expected quality level and functionality compared to competitive offerings, expected price of competitive substitute products, … . At the heart of the price-setting process lies the concept of perceived value. Customers can be expected to pay more for a product than its predecessor only if its perceived value is higher.

Often companies take an incremental approach in the estimation of the target selling price. They start with actual selling price of the predecessor model and adjust this price according to changed functionality, perceived value. The interaction between functionality and price is carefully analysed. Keeping the survival triplet in mind, management takes the maximum allowable functionality into account when setting prices and deciding what functionality should (can) be added. The aim is to design a product that will sell at its target price and achieve the desired sales volume. An increase in functionality may not always be translated in an increase in price because of the company’s strategy or competitor’s strategies. When the upper limit of the selling price is reached than the only benefit of an increase in functionality are increased sales.

Pricing by functions\(^8\) is another method that can be used to estimate the selling price. The logic behind pricing by functions is that a product price can be decomposed into thousands of elements, each of which reflects the value consumers are willing to pay for that particular element. A product consists of many functions and each function can comprise of hundreds of such elements. The addition of the values of each function gives us the expected selling price.

2.1.2. Target profit margin.

The acceptable economic profit will mainly be driven by expected financial returns of shareholders and investors. The economic profit that a company has to realize in order to satisfy the shareholders and other stakeholders’ expectations will have an important impact on the target profit margin. Kato (1993, 40) argues that the target profit margin for particular products should be driven by corporate strategic profit planning. The total target profit, that is the profit for the entire company, is based on the medium-term profit plans, which reflects management and business strategies covering a period of three to five years. The computation of the target profit is not something arbitrary, it is a real commitment agreed upon by everybody who has any part in achieving it. Or like Kato et al (1995, 41) describe it, the medium term profit plan is more than just a set of schedules that accountants use to

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\(^8\) To give some examples of functions for instance, in the case of automobiles: style, comfort, operability, reliability, quality, attractiveness and various others.
Chapter 2 Target Costing Process

compute variances that managers then explain to top executives. In Japanese business, the medium-term profit goal represents a commitment that is agreed to by everyone who must play a part in achieving it. The English word ‘target’ does not fully capture the commitment that Japanese managers make in attaining the medium-term profit goal. Hence, procedures to compute the target profit should be scientific, rational and agreed to ensure its credibility. In order to achieve credibility a considerable amount of energy is spent on customer and competitor analysis. **Wishful thinking is not allowed, only realistic plans can be accepted.**

Companies often use metrics as return on investment, return on assets, return on sales, … to determine the target profit margin. To this end an example of the use of the return on sales metric will be explained further in detail. The company has set in its long-term plans a certain long-term profit ratio. The return on sales ratio has to be in line with the long-term profit ratio. Further the company has calculated its expected selling price and its target sales volume. Now the lifetime target profit for a specific product is calculated as follows:

\[
\text{Lifetime target profit} = \text{Target sales} \times \text{Return on sales ratio}
\]

Wherein:

\[
\text{Target sales} = \text{Expected selling price} \times \text{Target sales volume}
\]

The lifetime target profit then can be allocated to an individual product as follows:

\[
\text{Profit margin of an individual product} = \frac{\text{Lifetime target profit}}{\text{Target sales volume}}
\]

This latter is rather a difficult task, allocating the total target profit to the different products in a company’s product portfolio. For this, the management have to imagine a future product portfolio in today’s environment. Again, customer analysis is an important factor, how do the preferences of the customer change over time? Changes that have to be taken into account in order to provide a complete product portfolio that satisfies the needs of the customer but does not confuse them. Cooper and Slagmulder (1997, 101) come up with a similar reasoning. Setting target profit margins starts with the target profit margin of the product line (or other grouping of products) thereafter a company raises or lowers the target profit margin for individual products depending on the realities of the marketplace. So target profit margins of individual products can differ from each other. Of course a lower target profit margin for one product has to be compensated with a higher target profit margin of another product. In order to guarantee that the company attains its long-term objectives. Also the historical profit margin of predecessor products is valuable information. In this case computer simulation is often used to identify the relationship between selling prices and profits. From this relationship the
company can identify the target profit margin for future products. Cokins (2002, 20) calls this also baseline experiences. This is an approach to establish the target profit margin of existing products relying on examining the actual profit margins of existing predecessor products and then making adjustments to those margins. Thus, the target profit margin is set based on historical profit levels, the relative strength of competitive offerings and the profit objective captured in the long-term profit plan. If management feels this profit objective is unrealistic, it is modified and target profit margins are reduced so as to increase the target cost. Setting profit margins in this manner makes the target cost reflect the relative competitive position of the company. A highly efficient company will set target profit margins higher than less efficient companies and will have lower target costs.

2.1.3. Target cost or allowable cost.

Making use of the formula formulated above, the target cost is the deduction of the target profit margin from the expected selling price. The target cost is based on a market driven selling price and not on cost information from inside of the company. The allowable cost reflects the company’s relative competitive position because it is based on its realistic, medium term profit objectives (Cooper and Slagmulder, 1999, 27).

As stated above, a highly efficient company will set target profit margins higher than less efficient companies and will have lower target costs. If a company sets the target profit margin as the reflection of the capabilities of the most efficient competitor, than the obtained target cost can act as a benchmark. Companies with a significant competitive disadvantage will benefit most from estimating benchmark costs and calculating the difference between those costs and their target costs. Such companies will be inclined to set even more aggressive cost targets. The narrowing gap between the benchmark and the target costs would demonstrate the achievement of competitive parity. Companies that are highly effective will not benefit from benchmarking and may even be hurt by it if they become complacent.

2.2. Adding up method.

The basic idea of the adding-up method is as follows:

\[ \text{Target cost} = \text{cost of component 1} + \text{cost of component 2} + \ldots + \text{cost of component i} \]

---

9 This is analogous to evaluating the performance of an investment portfolio based on a composite average rate of return from the portfolio’s high and low performing stocks. (Cokins, 2002, 20)
In this approach, target costs are the sum of the broken-out cost components. The target cost for each part, component, or activity is estimated starting from the current cost level and considering all possible cost reductions. These costs are summed for each product function and the target cost of the new product is calculated. By reducing some components’ costs and possibly raising others, companies can reduce the product’s overall costs while improving design.

In the adding up method it is difficult to provide a logical connection with the profit and business plans. This in contrast with the deductive method where target costing links strategy and profit planning to product cost by determining target costs only after target prices and profit margins have been calculated. In the adding-up method costs are the dominant factor that determines the product price. A price solely based on inside cost information increases the risk that the company brings a product to the market that is not price competitive or that returns an unacceptable low profit. Innovative ideas for cost reductions seldom emerge with this method.

The adding up method is based on the existing technology and past cost data of the company and its subcontractors. Due to this derivation the result is normally quite achievable because it is basically an extension of what has been happening within the company and its subcontractors (Yoshikawa et al., 1993, 42). In this sense, the adding up method is sometimes perceived as less sophisticated than the deductive method (Kato, 1993, 38).


Feedback information is very important in the target costing process. Feedback information, primarily cost estimation, is useful in answering the question ‘Is it likely that we will achieve our target goals?’ If this is not the case then action has to be undertaken or if necessary the company has to redesign the product. Weber (1999, 45) holds the same opinion, successful target costing requires regular tracking of performance estimates and comparison to targets. Information is a key enabler of target costing. Whether it relates to the market, new technology, specific products or processes, or estimated value indicators, information drives the entire process.

Like Yoshikawa et al. (1993, 78) points out, the disadvantages of detailed cost estimation are that it is time-consuming and costly. A company has to make a trade-off between accurate information and cheaper and quicker information. This is a real important trade-off a company has to make. Sometimes a company has to sacrifice accuracy in order to have the cost information on time. If this trade-off is not considered properly it is possible that the company is confronted with a situation where the estimated cost will not attain target cost, but it is too late to make any necessary design changes.
Most of the new products are variants of predecessors. In those cases existing products provide a reference point for cost information. This allows us to make an estimation of the cost of the future products based on cost information of existing products. Such estimation is called the ‘current cost’ or also the ‘ongoing cost’. Fisher (1995, 55) gives a couple of advantages of the use of the cost of an existing product. The advantages of using the cost of an existing product as starting point for estimated cost include ease of calculation, reduced calculation cost, and decreased need for detailed product specifications. Of course sometimes it is possible that experience and history are poor predictors of the future. New technology used in products can be so radically different from anything else on the market that little relevant information is available (Dutton and Ferguson, 1996, 35). When a company brings a totally new product that has not a predecessor, then it is obvious that there is few relevant information available.

In current production it is possible that several cost reduction ideas have emerged but could not be applied to current products. By taking possible cost reduction opportunities into account, a company can calculate an as-if cost\(^{10}\). The as-if cost will be lower than the current cost, because the current cost is corrected with the cost reduction opportunities, but still higher than the target cost. Hence, only realizing the as-if cost is unlikely to be sufficient to realize the company’s medium term profit plan. Actually, filling the gap, also called ‘cost gap’, between the as-if cost and the target cost is a major focus of target costing.

4. The cost reduction objective.

Figure 9 illustrates the difference between the target cost and the current cost. This difference is called the ‘total’ cost reduction objective. As already explained above the target cost is only determined by external conditions, it does not take design and production capabilities of the company and its suppliers into account\(^{11}\). Hence, there is always a risk that the cost reduction objective will not be achievable. If this is the case the company has to identify the achievable and the unachievable part of the total cost reduction objective. The achievable part can be split into two parts, the ‘latent’ cost reduction and the target cost reduction objective. The unachievable part is called the strategic cost reduction challenge (Cooper and Slagmulder, 1999, 28). The latent cost reduction is the reflection of the already available cost reduction ideas. The distinction of the strategic cost reduction challenge is made in order to set the target cost reduction objective at an optimal level. The target cost reduction objective must be the reflection of the ability of the product designers and suppliers to remove cost from the proposed new product. The unachievable part or the strategic cost reduction challenge must

\(^{10}\) As-if cost = as if we had implemented all available cost reduction ideas.

\(^{11}\) Especially when the target cost is calculated with the deductive method. When the target cost is calculated with the adding-up method also internal information is used (more in particular internal cost information).
Chapter 2 Target Costing Process

tend to zero in order to maintain the discipline of target costing. The process by which the strategic cost reduction challenge is established must be highly disciplined. It may not become a mean through which the company enlarges the strategic cost reduction challenge in favour of the target cost reduction objective just for achieving that target cost reduction objective. The company must set the target cost reduction objective so that it is only achievable if the entire organisation makes a significant effort to achieve it.

It is also possible that the company is very efficient and the achievable cost reduction exceeds the total cost reduction objective. Those companies do not face a strategic cost reduction challenge. Their superior efficiency lets them increase market share by reducing the selling price of the product or by increasing its functionality while keeping the price at the same level, or it lets them earn higher profits by keeping both the price and functionality at their targeted levels. Of course keeping in mind the confrontational environment, such conditions are short lived because companies can achieve only temporary competitive advantage over their competitors.

It is obvious that setting the target cost objective and the strategic cost reduction challenge is not an easy task. This is often a negotiation process between product designers, managers, accountants, … . Targets have to be set that they create ‘tiptoe’ objectives. This implies that they can be achieved with considerable but not impossible effort. Also Yoshikawa et al. (1993, 39) points out that in order
to be effective, target costing should motivate the planners and designers and producers of products. If the target cost (actually this equals in setting the cost reduction objective) is set too severe they may lose their motivation and give up. If the target cost is set so that it can be attained easily, again this may not motivate the planners and designers. The degree of detail and focus of the target will also be pertinent to their motivation. In terms of behavioural implications, setting target cost is as much an art as a science, companies must learn from experimentation and experience, as the exact approach depends on the situation.

5. **Filling the cost gap.**

To realize the cost reduction objective a wide range of actions is typically available, and the choice of which one to follow is limited only by the imagination of the individuals charged with meeting the target cost. Knowing how to identify the most appropriate action to take in a particular situation is an important ability for anyone involved in the target costing process. **In the target costing process, design changes are the main mean to reduce costs.** Hence, like Tanaka (1993, 10) argues, designers must know how design affects such things as material consumption, yield, machining methods, and line time. The best designers are of no use if they are not fully conversant with production techniques. Design engineers often lack-hands on production experience. Designers are therefore expected to work closely with the production divisions to build their personal funds of information. In this case, cost tables\(^{12}\) are very useful, because they contain much valuable information.

Woodlock (1999, 35) classifies the actions a company can take to achieve the target costs into three possible categories. The recognition of those three categories is important because actions can have differing effects on products costs. The classification determinant is here mainly; are product’s costs fixed or are they variable? After having determined whether costs are fixed or variable, actions can be classified into the three categories. The first category contains actions that alter production levels from current or expected levels. Production levels influence product costs by allowing fixed costs to be spread over fewer or greater number of units. For example sales incentives can lead to increased production, allowing the company to spread the fixed costs over a greater number of units, hence lowering unit costs. A second category contains actions that alter the mix of the product’s fixed and variable costs. For example, instead of making a component the company can also buy the component from a supplier. The third category contains actions that reduce a product’s fixed or variable costs. For example when a company gains price concessions from its suppliers. Woodlock (1999, 33) gives also some risks associated with each category. When a company tries to achieve its target costs by increasing production, there are always risks that the company will be left with unsold product.

\(^{12}\) Cost tables are also often used in the target costing process, cost tables will be explained further in detail in chapter three ‘Supporting techniques’
Companies that alter the mix of the product’s fixed and variable costs may find that the product’s cost is greater after the changes. When sales levels drop below the targeted level for the period, the product’s fixed costs will be spread over fewer units than expected. Reducing the variable or fixed costs can have negative effects on the quality of the product.

Above the action of altering the production level is mentioned. Increasing production is somewhat an economy-of-scale argument. So by increasing the production, the company tries to achieve efficiency gains. Tomas Yu-lee (2002, 24) states that an increase in efficiency does not automatically equal cost savings. For instance, if a design improvement can reduce the machining time or assembly time of an operation, the individual reduction of resources consumed by the improved product design does not necessarily reduce cost for the company or lead to the achievement of a target cost. To achieve true cost reduction, the company must obtain a decrease in concrete resource space, personnel, and machinery. Anything else is a mere shell game, shuffling costs from one use to another, or to idle capacity. An increase in efficiency results in two things. First, it allows for more output, which may lead to more sales and a reduced rate of cost increase. It does not lead to a cost decrease; in fact, there is an increase in materials, because additional materials are needed to make more units. Second, it increases the available capacity, so that more work can be done. Tomas Yu-Lee (2002, 27) gives three ways to increase profitability (or reduce costs) when a company realises efficiency gains. The first possibility is that the company has to reduce people or space related capacity and, thereby, reduce cost. The second possibility is to increase output of products in demand and, thereby, increase revenue. The third possibility consists of selling available capacity and, thereby, increasing revenue.

6. Transmitting the competitive cost pressure to the company’s suppliers.

Once the company has established the target cost of a product, it develops the target cost for its suppliers. Cooper and Slagmulder (1997, 140) call this process ‘component-level’ costing. As already mentioned in chapter one, lean companies are more horizontally then vertically integrated. Hence, transmitting the competitive cost pressure to the suppliers of the company is very important, because lean companies often buy a significant portion of their materials and parts from external suppliers instead of internal suppliers. A company becomes very dependent of its external suppliers; supplier relations are extremely critical to the company’s success. Cost and quality are only two very important decisions variables in the selection of a supplier. Target costing provides a powerful mechanism to discipline suppliers by allowing the company to set the selling prices of the components they supply.

Fisher (1995, 55) says that is has been argued that assigning cost to components is most applicable when the new product is similar in design to previously manufactured products. It has further been
argued that the component method should not be used for innovative products, because designers may become material-oriented rather than function-oriented. For innovative products target cost should be allocated to functional areas of the new product. A functional allocation method attempts to allocate the target cost to product characteristics that directly satisfy customer requirements. A similar reason is given by Yoshikawa et al (1993, 48), assigning the target cost to blocks of components restricts the designers and often leads to the new product being quite similar to existing products. In contrast, by assigning the target cost to the functions of a product, the designers have more freedom in terms of achieving the target cost using alternative design approaches. The basic idea behind the assignment of the target cost is to provide a guideline rather than a strait-jacket for designers and, for this reason, the latter approach is generally preferable.

In the next paragraphs, the component method will be explained in the same way as Cooper and Slagmulder (1997, 140) did. Target costs for components can only be set when the product design has reached the stage at which specific components can be identified. The component level target costing process consists of three majors blocks. The first block uses the component cost history as the starting point for estimating the new component level target costs. The second applies the company’s supplier-base objectives to the selection of suppliers in general. The third deals with the selection of the supplier for a given component.

In the first block, using component cost histories, several techniques can be applied, including functional analysis and productivity analysis. Functional analysis is a procedure for identifying the target cost of a subassembly based on its functional characteristics. Productivity analysis is a procedure for identifying the target cost of a subcomponent based on its manufacturing process. This procedure requires a more in depth knowledge of the production process.

The second block or the supplier-base objectives includes maintaining supplier relations, extending the supplier base, and inducing supplier creativity. Target costing is most effective when applied in the context of long-term supplier relations that are cooperative in nature. The objective is to create a supply chain culture of continuous innovation and cost reduction, but it can be achieved only if the suppliers view the buyer-supplier relation as worth the investment. Companies often develop incentive plans to encourage innovation or creative cost reduction ideas. These plans reward the supplier with the complete or a part of the order of that component.

In the third block suppliers are selected. This selection is often based on three criteria: the competitiveness of their bids, their reputation, and the degree of innovation they have brought to the component. As stated above, target costing is most effective when applied in the context of long-term supplier relation that are cooperative in nature. Therefore, when a long-term supplier fails to make the
lowest bid or develop the most innovative solution, the company may still reward the supplier with a part of the order. The selection of a supplier is not a one-of-a-kind decision or short-term decision, several factors influence the decision which all have to be taken into consideration.

It is worthwhile mentioning that the sum of all the component level target costs does not need to be equal to the target cost. By establishing an adequate reserve, the number of minor cardinal rule violations can be significantly reduced without reducing the overall discipline of target costing (Cooper and Slagmulder, 1997, 148). A reserve must be sufficient to offset the anticipated overruns but should not introduce slack into the process.

7. Summary.

Of course one of the main goals of target costing is to come up with a specific target cost at which a product must be produced in order to give the company a reasonable profit on mid-term basis. There are two important methods to calculate the target cost of a product. These two methods are the deductive method and the adding up method. In the deductive method target costs are calculated by deducting the target profit margin from the target selling price. In the adding up method, target costs are the sum of the broken-out components. On the one hand, the deductive method is been seen as the dominant method, mainly because this method provides a logical connection with the profit and business plans. On the other hand the adding-up method is sometimes perceived as less sophisticated than the deductive method (Kato, 1993, 38).

During the setting of the expected selling price a company has to take multiple factors into consideration. But at the heart of the price-setting process lies the concept of perceived value. Customers can be expected to pay more for a product than its predecessor only if its perceived value is higher.

The setting of the target profit margin or the acceptable economic profit will mainly be driven by expected financial returns of shareholders and investors. The economic profit that a company has to realize in order to satisfy the shareholders and other stakeholders’ expectations will have an important impact on the target profit margin.

Feedback information is very important in the target costing process. Information is a key enabler of target costing. Whether it relates to the market, new technology, specific products or processes, or estimated value indicators, information drives the entire process.
The setting of the target cost objective and the strategic cost reduction challenge is not easy. The target cost reduction objective must be the reflection of the ability of the product designers and suppliers to remove cost from the proposed new product. The unachievable part or the strategic cost reduction challenge must tend to zero in order to keep the discipline of target costing. The process by which the strategic cost reduction challenge is established must be highly disciplined, otherwise the target costing process loses its effectiveness.

To realize the cost reduction objective a wide range of actions is typically available, and the choice of which to follow is only limited by the imagination of the individuals charged with meeting the target cost. Knowing how to identify the most appropriate action to take in a particular situation is an important ability for anyone involved in the target costing process. In the target costing process, design changes are the main means to reduce costs.

Lean companies are more horizontally then vertically integrated. Hence, transmitting the competitive cost pressure is very important. Target costing provides a powerful mechanism to discipline suppliers by allowing the company to set the selling prices of the components they supply. Target costing is most effective when applied in the context of long-term supplier relations that are cooperative in nature. The objective is to create a supply chain culture of continuous innovation and cost reduction.

13 The cardinal rule will be explained more in detail further in the thesis. In short, the cardinal rule states: ‘the target cost can never be exceeded’.
Chapter 3
Supporting Techniques

1. Introduction.

Sound techniques do not only improve the quality of the final solution but also accelerate the process by a company to make decisions more quickly. There is not a world shortage of techniques. Like Robinson (1999, 73) points out target costing has its roots in two activities, i.e. cost management and product development. This implies that techniques of both areas are used in the target costing process. Not only cross-fertilization between several techniques, but also total new techniques are developed by target costing teams in order to support the process in the best possible way.

The second section deals with market research; market research is not a technique as such. But I have opted to handle this issue in this chapter because market research provides an indispensable support to target costing. Nevertheless, a few concrete techniques of market research are briefly described. The third section explains the importance of cost tables during the target costing process. Value engineering and functional analysis, two important techniques used to examine cost reduction opportunities, are fully described in the fourth and fifth section.

2. Market research.

Companies often have blind spots about the public perception, for there may be features that companies consider to be of ‘flagship’ importance but to which the public either may be apathetic or antagonistic. The best source to consider this angle will be customer contacts or in other words proactive market research.

As described in chapter two, perceived value is an important factor that influences the expected selling price. As the expected selling price is the starting point of the target costing process, it is of the utmost importance that the determination of the expected selling price is based on good market research. Customer perceptions also change over time so market research cannot be a one-of-a-kind event. A company has to conduct market research studies on a frequent basis, in order to get a grip on the evolution of customer perceptions. The same is suggested by Cooper and Slagmulder (1999, 24) who say that the ability to fine-tune the functionality and quality of products during product development means that the company has to return to the market occasionally to ensure that design changes have
not invalidated the target selling price. Also Ansari (1997, 25) states that continuous input from customers is solicited. Thanks to market research the company builds up knowledge of the market.

Not only feed-forward data collected via market research is important, also feedback information is very valuable for a company. Ansari et al. (1997, 71) argue that feedforward information is important but not more important than feedback information. Feedforward elicits customer attitudes. Attitudes reflect what customers think they want and would be willing to pay for. Feedback information encompasses actual decision and action data: purchases, returns, complaints, and product failures. Results of attitudinal research indicate that actions do not always follow expressed attitudes. Therefore, it is important to combine both forward looking and feedback information in the target costing process. The analysis of feedforward and feedback information are not two independent analyses. Both have to be analysed at the same time, so a company can identify important relationships between the two. According to Cooper (1996, 32) consumer analysis plays a key role in helping managers predict the directions in which the survival zones are moving. He also makes a distinction between two types of consumer analysis, short-term and long-term consumer analysis.

Also important to realize is that market research not only has to have a customer focus but also a competitor focus. Companies that use target costing tend to define competitors from a customer perspective: “I am about to buy something, so what are my options?”. This in contrast to the following perspective: “Competitors make similar things as we do”. In the first perspective competitor analysis is closely linked with consumer analysis. Knowledge of what the market reaction can be on several possible factors is very important in the target costing process. Robinson (1999, 75) argues that timing is the underlying problem when seeking market reaction. Therefore, pre-testing should be part of market research on a new product because this will support the decision process. Pre-testing is a way of checking views on specific points on the product during the run-up to the target costing process. Pre-testing can be used to explore the market attitude to changes in the product design and to price amendments.

Several methods can be used to collect market information, some common ones are briefly described next.

- **Customer panels** are formal groups that meet regularly to suggest improvements to product and services. The insights gained usually come from the interactions among the panel members.
- **Customer value surveys** are conducted after the company has tentatively identified the key dimensions of customer value through internal and external sources.

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14 The survival zones, where a company has to compete in, are fully described in chapter one.
Internal sources include front line salespeople, customer representatives, and customer service records. External sources include individual customer discussions. Customer value surveys are usually conducted by telephone or through the mail or some combination of the two.

- **Face-to-face interviews** with customers during site visits, golf, or other social settings are another way of learning about customer requirements and their evaluation of the company’s product and price versus the competitors.
- **Warranty claims or customer complaints or follow-up calls** provide information about any problems customers face with the product.
- **Market statistics** about sales, market share trends, customer retention rates, allowances granted, or product returned typically are available in a company’s information system. These statistics provide feedback information about the market’s acceptance of a product.
- **Conjoint analysis** is a technique that tries to reveal the relationship between the preference of the customer for a product and that product’s functionalities and features.

The approach that only consists of asking customers, “do you like this offering better than that one?” and stops there will not yield the necessary valuable insights. Companies, or more specifically marketers, have to use an approach that will reveal deeper patterns of customer preference.

Market research also allows the company to examine the possibility of performing psychological price fixing. Psychological price fixing can support companies in establishing a specific market position and give them the possibility to take some non-economical factors into account.

It is clear that market research is indispensable, but an overemphasis on the market can also cause problems. For example, constant attention to customer desire causes extreme market segmentation, so customers become confused by the large number of different products.

### 3. Cost tables.

As target costing mainly focuses on redesign, it is important that a company can evaluate several design alternatives. This is one of the main objectives of cost tables; cost tables provide answers to ‘what-if’ questions relating to product design alterations. Cost tables are databases of detailed cost information based on various manufacturing variables. These cost tables are used in companies to project product costs assuming the use of different materials, different manufacturing methods, and
Chapter 3 Supporting Techniques

different functions (Yoshikawa et al, 1990, 30). **Cost tables play an important role in cost management and cost reduction.** For example, it is difficult (though not impossible) to conduct functional analysis efficiently without cost tables, because cost tables allow managers to quickly ascertain the cost implications of their proposals. Cost tables facilitate functional analysis by ensuring that the cost implications of modifying, dropping, or adding functions can readily be determined. Cost tables used in conjunction with an exploded bill of materials provide valuable information. The information of cost tables can be used:

- To help with the design of new products that meet specific price and cost targets.
- To modify existing products in order to achieve targeted cost reductions or value improvements.
- To help select and maintain product lines.

Cost tables are used as a cost reduction tool for existing products, but also for the minimisation of the cost of new product which you are beginning to design, cost tables come in handy. Yoshikawa et al (1990, 33) identifies two types of cost tables. The first type, an *approximate cost table* is used for the planning and basic design stages of new products. The main objective of this type of cost table is to establish a decision criterion of economical design, for example to help in choosing the best functions and design for a new product. The second type is called *detailed cost tables* these are used for purchasing negotiations and for production cost management. The main objective of this type of cost tables is to establish a decision criterion for process design, production method and, for the optimal purchasing prices for subassemblies or parts. For example helping to choose the best machines on which to produce a new product.

Among others Tatikonda and Tatikonda (1994, 25) make the distinction between *design cost tables* and *manufacturing cost tables*. The major use of cost tables in the design phase is to estimate future costs at the various stages in the design process. This is possible because cost tables are based on various levels of cost drivers for the product. The basic content of the manufacturing and design cost tables are the same. The difference between cost tables for design and cost tables for manufacturing are the purposes for which the tables are used and also the inputs to the tables. Such as the number of cost drivers can vary between the types of cost tables.

Cost tables provide also a **starting point for negotiations** with suppliers and subcontractors about price and quality because, for example, they detail what a subcontracted component should cost if the latest production technologies are employed.
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The company benefits also from several indirect advantages. First, the development of cost tables builds up an experience and knowledge of the important variables that drive costs at the levels of activities, processes, and products. The data for cost tables is captured, developed, and refined over a period of years. Cost tables also support an ‘opportunity cost’ strategic philosophy by identifying alternative costs. Managers can then ascertain the opportunity cost of choosing a particular mode of production. Finally, cost tables enable management accountants to contribute effectively to multidisciplinary teams, because cost tables provide answers to the many what-if questions that managers and technical experts constantly ask. Indeed, management accountants may be able to initiate cost-saving proposals based on their knowledge of cost tables.

4. Value engineering.

The primary purpose of value engineering is to increase the value of a company’s products. In this case value is defined as the functionality of a product divided by its costs. Cooper and Slagmulder’s (1997, 129) definition of value engineering is the following: “value engineering is a systematic, interdisciplinary examination of factors affecting the cost of a product so as to devise means of achieving the specified purpose at the required standard of quality and reliability at the target cost”. There are no formulas or manuals for value engineering, but there are areas where it is possible, including: material specifications and consumption, number of parts, ease of work and man-hours. For instance, fewer fasteners will be used if it is determined that a part uses too many. A design may be changed based on a projection that a change in shape would make production much easier. Special parts will be replaced with mass-produced parts if performance is the same. The painting method for certain parts will be altered as necessary (Tanaka, 1993, 10). Sakurai (1992, O3-5) defines value engineering as an activity to design a product from different angles at a lower cost by reviewing the functions needed by customers. Value engineering is conducted differently at different companies. This last is similar with a part of Tanaka’s definition: ‘There are no formulas or manuals for value engineering’. Value engineering is perhaps more of an art than a science. Its success depends on high degrees of creativity and lateral thinking. Experience is an essential ingredient, but also detailed cost information is critical, as any design change must not only meet functionality and quality requirements, but must also show results in cost savings. Value engineering primarily focuses on product functions and only secondary on cost. Hence, it is wrong to view value engineering as another cost reduction technique. The motivating force behind value engineering is to ensure the product achieves its basic function in a way that satisfies the customer at an acceptable cost.

The concept of value engineering was in the beginning mainly used as a management control tool for purchasing activities. Now, however, the use of value engineering has been expanded to the control of all kinds activities. Value engineering is used not only for production processes but also for
Chapter 3 Supporting Techniques

purchasing, planning, design, and other processes as well. **It can reduce costs without degrading product quality.** Consequently, a company can benefit significantly as a whole by reducing costs in areas other than production, even if there may be a cost increase in certain departments.

Tatikonda and Tatikonda (1994, 24) points out that both **functional value** and **esteem value** are considered in the assessment of the value of an alternative in the value engineering process. Functional value is the perceived value of the intended use\(^\text{15}\). To achieve maximum functional value, a company has to provide the performance function at the lowest possible cost. Maximum esteem value is achieved by identifying the lowest possible cost of providing the necessary aesthetic features customers’ desire. In the assessment of the **relative value**\(^\text{16}\) of each product function, Tatikonda and Tatikonda (1994, 24) identify two phases, *i.e.* an analytical and a creative one. During the analytical phase, the functional value and the esteem value are investigated. A series of questions is asked as each product function or feature is studied with respect to its costs and value. The following questions are examples of questions that are typically asked during the analytical phase. The product is a tie clasp.

- What is it? - A tie clasp.
- What will it do? - Hold tie in place.
- What are its costs? - $6.
- What is its value to the customer? - $15
- Can something else accomplish the same function? – A paper clip can accomplish this function.
- What is the cost of the alternative? - $0.02.
- What is the value of the alternative to the customer? $0.00, since this alternative is not aesthetically pleasing.

During the creative phase, the findings of the analytical phase are used to seek creative ways to eliminate any unnecessary functions or features or modify them to increase the value for customers. Or to define new solutions that maintains the desired balance between functional value and esteem value.

As stated above value engineering is conducted differently at different companies. A structure in the sequence of the value engineering is identified by Cooper and Slagmulder (1997, 133). Three Nth-look approaches can be distinguished. **Zero-look value engineering** is the application of the value engineering principles at the concept-proposal stage, the earliest stage in the design. In this stage the basic concept of the product is developed and its preliminary quality, cost, and investment targets are established. Its objective is to introduce some forms of functionality that did not previously exist.

\(^{15}\) For example: the primary purpose of an automobile is to provide transportation.
Unlike zero-look value engineering, which seeks new forms of functionality, **first-look value engineering** focuses in the major elements of the product design and is defined as developing new products from concepts. First-look value engineering enhances the functionality of a product by improving the capability of existing functions. It is applied during the last half of the concept-proposal stage and throughout the planning stage. **Second-look value engineering** is applied during the last half of the planning stage and the first half of the development and product preparation stage. The objective of second-look value engineering, unlike that of zero- and first-look, is to improve the value and functionality of existing components, not to create new ones. Consequently, the scale of changes is much smaller than for zero- and first-look value engineering.

5. **Functional Analysis.**

**Functional analysis is closely linked to value engineering.** Functional analysis is a cost management system that focuses on the various functions of each product. The individual functions of a product become the set of cost objectives, instead of simply analysing costs by product line (Yoshikawa et al., 1992, O2-1), and provide the basis for the costing system. Functional analysis does not only assist in identification of cost reduction opportunities but also focus on the possibilities for improving products or services by adding new functions. Value engineering involves designing a product from different angles at a lower cost by reviewing the functions needed by customers (L. Gagne and Discenza, 1995, 20). Functional analysis is an important product assessment activity within the company. When this type of analysis based on product functions is supported by the provision of cost information, it becomes functional cost analysis. Functional analysis is beneficial at all stages of the product life cycle. However, functional analysis is most beneficial in the early stages of a new product because it is generally easier to affect costs (and thus profit) during the product design stages than it is once production has started and investments already are committed.

Yoshikawa et al. (1992, O2-2) identifies **seven basic steps in the actual technique of functional analysis.** These seven steps are:

- Choose field of analysis.
- Gather information.
- Draw a functional family tree.
- Evaluate the relative value of the functions.
- Suggest alternatives for improvement.
- Make a final decision.
- Audit the actual results.

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Relative value = the ratio of cost to perceived value for each function.
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A *managerial assessment* of where the most benefits are likely to be obtained is part of the first step.

The second step requires *consideration of both engineering specifications and accounting data.* Attributing the cost to each function of a product provides the necessary foundation for meaningful functional analysis. To provide relevant costing information to support functional analysis, knowledge has to be acquired of how costs are affected by eliminating, altering, or combining individual functions. Therefore activity based costing systems are often used. An activity based costing system contributes in the identification of the cost drivers for particular product functions, and so contribute in more accurate information. In this case, cost tables also deliver valuable information. An important component of cost tables would be a set of relationships between the cost and the major factor that causes that cost to change. Or another example of valuable information would be information about the various costs of using different types of manufacturing technology. Cost tables with detailed information of this sort are crucial for successful functional analysis.

In the third step the company has to draw a *functional family tree*. This is a logical diagram of each function -not each part- of a product. Figure 10 shows an example of a functional family tree of a ballpoint pen.

![Functional family tree of a ballpoint pen](source: Yoshikawa et al, (1992, O2-2))

Two types of information to evaluate the value of the function are required in the fourth step.

- The actual manufacturing cost of each function.
- The target cost of each function.

With help of marketing intelligence data, estimates are made of the monetary value to customers of each function of the product. These estimates are the used to help to determine the target cost of each function. Hence, a function’s target cost reflects its perceived importance to the customer. Now the company can compare the function’s actual cost and its target cost. If actual costs exceed the market-oriented estimate, there may be a need for modifications. If so, a fifth step, which consists of suggesting alternatives, will be necessary.
This fifth step is crucial to the success of the functional analysis. The initial aim is to generate as many alternative suggestions for improvement as possible. These suggestions can be reducing or combining functions, … a wide range of possibilities are available. The choice of which to follow is only limited by the imagination of the employees of the company. Cost information is here of the outmost importance. Cost information on each product function allows the cost reduction implications of these alternatives to be taken into account when undertaking the analysis and making proposals for change.

The sixth step consists of assessing the various alternatives and making the final decision based on criteria such as feasibility, market needs, and social acceptability. And finally, in the seventh step the company performs an audit to check that the proposals were accurate and to provide feedback for future functional analysis.

Further, Yoshikawa et al. (1992, O2-5) gives some potential benefits of functional analysis. To briefly sum up those benefits:

- First, if cost information is prepared for ongoing functional analyses, it is far more likely that cost consciousness will be instilled within the functional analysis teams.
- Second, the company will, over time, accumulate a bank of historical data on the cost of product functions, which should prove invaluable in planning and designing new products.
- Third, keeping all this detailed information makes it possible to compare budgeted costs with actual costs on a function-by-function basis. This activity can then be integrated with a system of responsibility accounting.
- Fourth, if functional analysis is applied at the design stage of a new product, a target cost for each function can be set for a team of designers and used as a control for their work.
- Fifth, the cost system will generate information that provides a useful basis for competitive analysis through the comparison of the cost of product functions with those of competitors.
- And sixth, a functional cost analysis segments costs in a way that facilitates a better understanding of why and where costs are incurred within the production process. Generating functional data may therefore force management to do a better job of identifying the cost drivers within their company for each element of cost, which should provide an additional aid to cost reduction.
6. **Summary.**

Proactive market research is needed because, companies often have blind spots about the public perception, for there may be features that companies consider to be of ‘flagship’ importance but to which the public either may be apathetic or antagonistic. On the topic of market research Ansari et al. (1997, 71) argue that feedforward information is important but not more important than feedback information. Feedforward elicits customer attitudes. Attitudes reflect what customers think they want and would be willing to pay for. Feedback information encompasses actual decision and action data: purchases, returns, complaints, and product failures. Results of attitudinal research indicate that actions do not always follow expressed attitudes. Therefore, it is important to **combine both forward looking and feedback information in the target costing process.**

Cost tables are databases of detailed cost information based on various manufacturing variables. These cost tables are used in companies to project product costs assuming the use of different materials, different manufacturing methods, and different functions (Yoshikawa et al, 1990, 30). **Cost tables provide valuable information to give an answer to several ‘what-if’ questions that product designer have when they evaluate a design alternative.**

Cooper and Slagmulder’s (1997, 129) definition of value engineering is the following: “value engineering is a systematic, interdisciplinary examination of factors affecting the cost of a product so as to devise means of achieving the specified purpose at the required standard of quality and reliability at the target cost”. **Value engineering primarily focuses on product functions and only secondary on cost.** Hence, it is wrong to view value engineering as another cost reduction technique. The motivating force behind value engineering is to ensure the product achieves its basic function in a way that satisfies the customer at an acceptable cost. There are no formulas or manuals for value engineering. Value engineering is perhaps more of an art than a science. Its success depends on high degrees of creativity and lateral thinking. Experience is an essential ingredient, but also detailed cost information is critical, as any design change must not only meet functionality and quality requirements, but must also show results in cost savings.

**Functional analysis is closely linked to value engineering.** Functional analysis is a cost management system that focuses 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. Value engineering involves designing a product from different angles at a lower cost by reviewing the functions needed by customers (L. Gagne and Discenza, 1995, 20). Functional analysis is an important product assessment activity within the company. When this type of analysis based on product functions is supported by the provision of cost information, it becomes **functional cost analysis.**
Chapter 4
Characteristics of Target Costing as a Cost Management Tool

1. Introduction.

In the diversity of the target costing practices described in the literature, I have tried to identify some common characteristics of target costing. Not only characteristics of the target costing process are identified and described, but also the characteristics of the organizational context and the environment where companies have to compete in. Also interesting is how those characteristics are incorporated in definitions of target costing. The three previous chapters provide valuable supporting information to those characteristics.

The second section goes further on the characteristics of the organizational context of target costing. The third section describes the characteristics of the environment of a company that uses target costing. Characteristics of the target costing process are fully described in the fourth section. Section five and six deal with the occurrence and the most frequently occurring characteristics in the definitions of target costing. The last section gives a definition of target costing that encloses all the identified characteristics.

2. The organizational context of target costing.


A company that uses target costing has to stimulate the multidisciplinary cross-fertilization of ideas, resulting from different individuals working together. This cross-fertilization often occurs in an extremely supportive environment, i.e. an environment that encourages open channels of communication, where information and views flow freely upward, downward and across the entire company. Cooper and Slagmulder (1997, 130) argue that multidisciplinary teams are indispensable, since successful cost reduction must balance all three characteristics of the survival triplet (cost/price, quality and functionality). The role these teams play in achieving the cost management objectives is critical. Without them, the grassroots commitment to cost reduction would not occur. It is the commitment of the groups to the cost reduction objective that creates the fundamental pressure for cost reduction. A similar argument can be found by Yoshikawa et al. (1993, 41), given the wide range
of factors involved in the setting of the expected selling price, target profit margin, target cost,.. . Target costing requires a participative effort involving representatives from production, engineering, design, marketing,.. . A company has to use the talents, innovativeness and simple awareness of every member of the organization in order to spot opportunities for profit improvement (Carr and Ng, 1995, 352).

Since target costing focuses on redesigning the products to achieve cost reduction, cross-functional teams are also important in the assessment of possible design alternatives. When a company considers design alternatives, the company must evaluate the design alternatives not only for their implications and for the final product but also for all the processes involved in making the final product. People with a broad range of functional perspectives must evaluate the options concurrently to ensure that benefits in one area do not cause problems elsewhere. Before taking on a cost-planning job, employees have often rotated through several departments (purchasing, design, sales...). The pay-off of that rotation: the employee has a broad perspective that gives him a unique ability to spot ways to reduce costs. Naturally bringing together people with diverse backgrounds and talents can cause conflicts. But conflicts can be seen as indication of progress. Conflicts have to be fought and resolved. In order to achieve the necessary communication, a corporate culture must reinforce trust and respect among team members so that different viewpoints are both offered and heard. Kim (1999, 10) argues that because target costing is cross-functional and company-wide, having the support of all employees is a must. Cross-functional resources must be dedicated to support the development of new products and processes. Employees and managers need experience in order to quickly identify challenges implied by the design as well as an open mind and a creative spirit so that they can suggest alternatives. Tanaka (1993, 10) suggests that the best designers are of no use if they are not fully conversant with production techniques. Design engineers often lack hands-on production experience. They are therefore expected to work closely with production divisions to build their personal funds of information. A design that addresses the concerns of everyone on a cross-functional team is likely to be far better than a design that addresses the concerns of only one particular function.

Another argument in favour of cross-functional teams is given by Kato et al. (1995, 39). Target costing requires managers and engineers to constantly estimate the production cost of a product as it moves through the design process, and they must draw on information from all parts of the organization. In other words, rather than being a passive and isolated part of the management process, target costing is an active component that transcends the narrow boundaries of particular functional areas in a company. Bonzemba and Okano (1998, 4) argue that without the synergy of cross-functional teams working in tandem to manage costs, the benefits of target costing can hardly be reached. Monden and Hamada (1991, 18) also state that the cooperation of many departments is needed in the execution of target costing. They use the term “people involvement”, to cover cross-
functionality. Sakurai and Scarborough (1997, 7) have the opinion that cross-functional structures have become indispensable for developing new products or conducting research and development (R&D) because they express strategic imperatives at the operating level. Another author Robinson (1999, 42) again holds the same opinion; target costing has no chance of success if the functions that are going to be involved in making and selling a product are not jointly involved in the development of the product.

Research and development can no longer independently develop a product, then hand it over to sales and marketing (which then must try to sell it), and finally report the results to the finance department for analysis. Only an integrated and competent product development team, which has members representing these different departments, customers, and suppliers, can satisfy the requirements of a truly market-oriented approach (Butscher and Laker 2000, 50).

Böer and Ettlie (2000, 50) argue that perhaps people all to easily think that target costing is straightforward: You start with the selling price of the product minus the profits you desire to determine the money you can spend to produce it. However, arriving at the right numbers requires intense cooperation among all groups involved in product development.

Ellram (1998, 45) gives two benefits of using teamwork during the target costing process. First, it creates a common language among the team members and even among the suppliers. Second, it also creates, for the cross-functional team, a common goal to work toward. In the previous chapter cost tables were described as an important tool during the target costing process. Cost tables are said to create a common language between the several departments of a company. The greater the detail of cost tables, the more cost items and the more subdivisions of cost items are necessary. All that information is spread across several departments in the company. So in order to bring all that valuable information together, collaboration of all the departments is of the outmost importance. Information of cost tables can deliver also valuable insights. Decisions taken in one place in a company often have an impact at other places in the company. These relationships can be revealed by cost tables. Using cost tables stimulates cross-functional collaboration.

As described in chapter two, a target cost is often decomposed to components or specific functions of a product in order to transmit cost reduction pressure to the several departments of a company but also for transmitting cost reduction pressure throughout the entire value chain. To assign cost reduction targets, a company must decompose the overall product cost into discrete elements. This requires understanding of the various components of the product cost. Again cross-functional teams can provide valuable insights. Ansari et al. (1997, 45) use a good metaphor to illustrate the importance of cross-functional teams and their valuable insights. A company must view costs through a kaleidoscope. Cost elements are little pieces of glass in the kaleidoscope, and with each turn they
reassemble themselves into a different pattern. Each pattern provides us a unique insight. This metaphor, for how to look to costs, can be generalized. When a company has for example a design alternative, it has to look at all the different elements of that alternative and how these elements assemble. It cannot be stated enough, cross-functional insights are indispensable.

From two case studies, more in particular Daihatsu Motors and Matsushita Electric, Kato et al. (1995, 50) deduct several common target costing themes. Some of them emphasize the importance of the cross-functional teams. The following two common themes can be used here:

- Target costing is used to pull together employees from diverse functions. Daihatsu has a more formal structure for linking managers in the different functions than Matsushita, which has a more decentralized organization.
- Target costing is used as a holistic management system that integrated all the diverse functions of the businesses. Marketing, production, accounting, product design, and customer service all worked together to make the target costing system function smoothly.

Yoshikawa et al. (1992, O2-2) stress the importance of an interdisciplinary approach during the functional analysis process. Functional analysis is a group activity that involves employees from different departments. Their aim is to use the information provided by functional cost analysis to propose alternative policies for improving cost management. Top management actively supports all functional analysis activities. Each analysis is usually organized by having several groups working independently on the same project. This stimulates competition and helps achieve quick and effective results. On completion of an exercise, the results are presented by each group to all participants as well as to the top executives of the company. Active support of the top management is also an important element. Schmelze et al. (1996, 26) hold the same opinion. Target costing transcends the functional areas of a company. For target costing to be successful, integration is needed in the form of cross-functional teams comprising engineering, product design, production, purchasing, sales, finance, cost accounting, cost targeting, and, in many cases, customers and suppliers. Upper-level management support is crucial to the success of target costing because resources need to be allocated to the target costing area, and the cross-functional teams must be empowered to make many critical decisions. Ellram (1998, 14) also recognizes the necessity of top management support and says it is a critical success factor, in order to make the time available, because target costing is a resource-intensive process, and to create an internal reward structure that supports target costing across all disciplines within the organization.
Tani (1995, 399) argues that simultaneously engineering\textsuperscript{17} is a key feature of target costing. Simultaneously engineering is important for at least two reasons. First, no drastic cost reductions will be realized without cooperative efforts between departments. Second, cooperation between departments is important for the emergence of strategy. So during the strategy formulation process, cross-functional cooperation can provide valuable insights. Results from a survey that Tani et al. (1994, 72) conducted also support the assumption that cross-functional teams are an important feature of target costing. Development, design, production technology and purchasing are all essential team members. Members from upstream (marketing and product planning) and downstream from product development are also important. However, results indicate that suppliers are rarely a team member.

An important aspect to bring up here is the concept of interactive control (Tani, 1995, 408). Interactive control emphasizes how control resides in shared information and values amongst managers gained through vertical and horizontal interaction. Vertical interactive control helps top management to communicate and share its value systems with the middle management, helps gather information from middle management that is pertinent to strategy formulation, and activates the emergence of strategy through middle management. Horizontal interaction or in other words interaction between different departments often results in successful joint problem solving.

In this case the importance of the Japanese keiretsu can be stressed. Keiretsu is known as a Japanese industrial structure with many inter-corporate group alliances. The member companies of the keiretsu are bound by cross-holding of stock, which consists of a small percentage of shares and a great degree of personnel interaction due to the exchange of the board of directors as well as employees between member companies. Putnam and Chan (1998, 114) argue that there exists also something like the American keiretsu, similar to the Japanese keiretsu. There exist some similarities between the American and Japanese keiretsu. These similarities are, among other, the use of target costing, the practise of using suppliers’ engineers to work side by side with employees and the early involvement of suppliers in the product development process. The latter two are more relevant for the characteristic: “Reducing the cost of products over the entire supply chain”, described in the following subsection. But a critical component of the American keiretsu, argued by Putnam and Chan (1998, 114), are the cross-functional teams. They enhance cooperation and trust between supplier and the manufacturer.

\textsuperscript{17} In simultaneously engineering a functional manager who is responsible for a stage in product development should influence the activities of the functional managers of the subsequent and preceding stages to achieve through cooperation the targets of costs, quality, timely introduction of new products to the market etc. This in contrast to the traditional ‘baton relay’ style of product development which follows a clear sequence of product planning, product development, detailed design, production preparation, and finally manufacturing (Tani, 1995, 400).
2.2. Reducing the cost of products over the entire supply chain.

Nowadays it is not uncommon that companies rely heavily on outside suppliers for components or even complete subsystems of their products. Therefore, the nature of competition focuses on the most efficient and effective value chain team competition (Dutton and Ferguson, 1996, 36). By planning the target costs throughout the value chain, target costing yields a valuable strategic and competitive advantage for all participants. Chained target costing systems create downward pressure over the entire supply chain. Effective target costing requires cooperative, nonadversarial relationships with both suppliers and customers.

Ellram’s research (1998, 9) about the role of supply chain management in target costing pointed out that target costing is not a stand-alone process. Rather, target costing supports, and is supported by early supplier involvement, concurrent engineering, value engineering, and a number of other initiatives. From the research it was clear that key suppliers are involved during the product concept stage. The company tries to leverage some of the supplier’s expertise. This early involvement allows key suppliers the opportunity to contribute to and participate in the design process. Suppliers mainly participate in target costing by providing new technology or ideas that are incorporated into design or by participating in design for production/manufacturability, to ensure that the final design is one that both supplier and the buying company will find easy to use and manage throughout their systems. Ellram (1998, 45) give also some benefits of target costing for supplier relations, i.e. it brings credibility to cost reduction discussions with suppliers. It facilitates early supplier involvement and target costing supports alliances with suppliers.

Ansari et al. (1997, 15) speak about the ‘extended enterprise’: target costing involves all members of the value chain, such as suppliers, dealers, distributors, and service providers, in the target costing process. Target costing diffuses cost reduction efforts throughout the value chain by developing a collaborative relationship with all members of the extended enterprise. A target costing system is based on long-term and mutually beneficial relationships with suppliers and other members of the value chain. Gray (Financial Times, 14 December 1992; Carr and Ng, 1995, 356) gives a good summary of the supplier-buyer relationship in the context of target costing. It is a commitment by the customer and supplier, regardless of size, to a long-term relationship based on clear, mutually agreed objectives to strive for world-class capability and competitiveness. Because target costing is based on the involvement of all major players of the supply chain, companies are often eager to adopt target costing. This is also stated by Nicolini et al. (2000, 306) the use of target costing, understood as a broad strategic management practice concerned with the coordination of the supply chain in order to achieve competitive advantage in delivering a product for which there will be buoyant demand, is a promising approach.
Cooper and Chew (1996, 89) argue that target costing is a rigorous cost management technique that helps prevent senior management from launching low-margin products that do not generate appropriate returns to the company, but its greater value lies in its ability to *bring the challenge of the marketplace back through the chain of production to product designers*. This has to been seen over the entire value chain, it brings back the challenge of the marketplace through the chain of production to product designers over the entire value chain. In other words not only the product designers of one single company, but all the designers of all the companies involved in the value chain. Also Cokins (2002, 14) argues the same: thanks to the growing awareness of extended supply chains, it is no longer possible for companies to traditionally view themselves in isolation.

The company has to exile the misconception that target costing is just another way of squeezing suppliers for lower prices, even if it means lower profits for suppliers. Trust backed with a commitment of both the company and its suppliers to long-term relationships is indispensable. A design team needs suppliers’ ideas for alternatives and also their feedback on how given alternatives pay out in terms of costs, technical performance. Therefore, companies have to reward their suppliers when they come up with valuable insights, information, innovative ideas,..... A good example is touched by Weber (1999, 40), namely the SCORE program at Chrysler. SCORE stands for Supplier Cost Reduction Efforts. The SCORE program encourages suppliers to review their own or related Chrysler processes for potential improvement. The program is backed with financial rewards for suppliers that identify cost-reduction ideas. Another way to reward suppliers is given by Cooper and Slagmulder (1999, 33). The company can award the supplier, who has suggested an innovative cost reduction idea, with a significant percentage of the contract for a specific component for a certain time.

Like Carr and Ng (1995, 359) point out, suppliers are often ranged on a scale going from ‘totally open-book’ companies to ‘downright awkward’ about giving information. In contrast to traditional suppliers who merely supply price quotations, open-book companies provide a complete breakdown of the price of their component material costs, packaging and shipping costs, overheads and profit. In order to obtain such a close relationship with a supplier, the supplier has to be treated in fair way. Otherwise, information never will be shared. Helping to erode your supplier’s costs and ensure its profit margin that is the message. This open-book policy facilitates a collaborative approach to innovation throughout the entire supply chain. Access to the actual cost, functional data, or other valuable data is granted to each main party, so that they can get involved in sensible debates about possible changes and their costs. Without an open-book policy, tension may be created between parties, there can also be lack of ‘honesty’ over the question of whether quality has been cut to meet the price. Hence, there is a higher need for more checks of the supplier and this means also higher costs.
Tani et al. (1994, 78) found in their research that the subjects of instructions to suppliers are mainly instructions on value engineering and the cost reduction rate. These instructions are necessary to attain tight target costs. Cooper and Slagmulder (2002, 7) suggest the same, the process by which costs are removed from the product is called value engineering, and it depends heavily on interactive relationships with the suppliers. Suppliers can provide early estimates of the selling prices of their products and when possible, insights into alternative design possibilities.

Cooper and Raiborn (1995, 98) argue that blurring the organizational boundaries also becomes critically important as competition intensifies to reduce the time the entire supply chain needs to bring out new products. So not only costs, but also time-to-market can be reduced by blurring the organizational boundaries.

Cokins (2002, 22) also refers to Collaborative Product Definition Management. Today collaboration is the more preferred choice, the key term in value chain management. Emerging software and information technology tools, many of them Internet based, facilitate rapid and accurate exchanges about product designs among the participants in the value chain. This is sometimes referred to as CPDM.

3. Characteristics of the environment of the company.

3.1. Highly competitive environment.

Competing and winning today is no guarantee that a player can compete and win tomorrow. Business as usual is not a characteristic of target costing. The topic of confrontational strategies and the survival zones where a company has to compete is extensively described in chapter one. When a company has to survive under such conditions, certain realities exist. Profit margins are low, customer loyalty is low, first mover advantages are small, and products that are launched outside their survival zones fail dramatically. Cooper and Slagmulder (1997, 7) argue that under such conditions, the benefits of target costing are potentially high. A company cannot afford to make many mistakes concerning launching new products, when profit margins and customer loyalty are both low. In contrast, in environments where the intensity of competition is lower, non-confrontational strategies, such as cost leadership and differentiation, can be successful. Such strategies allow for higher profits and increased customer loyalty. Therefore, the benefits of target costing will be potentially lower in such environments.

An environment of time-based competition, the rate at which functionality can be improved, is omnipresent in today’s business life. Sakurai (1992, O3-9) states that the rapid obsolescence is one of the most contemporary trends. The types of products vary and product life cycles become shorter.
These factors necessitate frequent model changes and the ongoing introduction of new products. Therefore, the product-design stage has become very important, a stage where target costing plays a major role as an effective cost management tool. Gagne and Discenza (1995, 16) argue that there has been a shift toward unstable, rapidly changing markets and technologies. To implement market-driven management, like target costing, across the organization, measurements and cost control systems must be designed to motivate the desired customer-oriented behaviour. As product life cycles shorten and consumer demands for customization escalate, predetermining costs and profit margins across a product’s life cycle becomes increasingly important.

In the past a company used a strategy of releasing the product at a high price. Those products with a high price were only affordable by only a small number of lead users. Lead users are willing to pay a price premium for the first-generation product and also help create excitement for its new features; they would even help establish the brand. After some time the company then begins to scale up production and introduce serially cheaper versions of the products for increasingly broader segments of customers. The company would generate its highest profit in the mass market. But today global market no longer gives a company time to introduce a product and then scale up. Lean companies can bring ‘me too’ products to the market so rapidly that first-mover companies have no time to establish brand loyalty, let alone recover development costs. Nowadays a company has to be able to bring a product to the market that is carrying the right price and functionalities ‘since day one’ of the launch of the product.

Ansari et al. (1997, 32) describe a target cost environment as follows. Target costing typically occurs in a competitive environment, in which companies differentiate their products on the basis of quality, service, time to market, support, product functions, and features. In an environment like Ansari et al. described, the product price becomes a statistic that summarizes the market’s judgment on the particular package of quality, service, support, time, functions, and features bundled into a product. Sales price is market driven and hence non-controllable, but costs are controllable (Carr and Ng, 1995, 356). Also Shank and Fisher (1999, 73) note that companies are faced with increased competition. Hence cost-based pricing is becoming a relic of the past, whereas price-based or target costing is emerging as key strategic tool.

Tani (1995, 403) states that target costing is deemed to be a response to environmental uncertainty. The uncertainty of the decision environment is determined by the variability and specificity of factors needing to be considered in decision-making. It is often assumed that uncertainty is governed by the frequency of technological innovation, the diversification of customer needs, and the intensity of market competition. Because of today’s competitive environment companies often choose to create small profit centres. This in order to be able to respond quickly to the changes in the competitive
environment. Companies want to become lean and agile companies, which is a necessity in environments with lot of uncertainties.

4. Characteristics of the target costing process.

4.1. Large scale cost reductions occur early in the product life cycle.

As already pointed out in chapter one, several authors argue that up to 80 percent of a product’s costs are determined in the design phase. This makes it very difficult for a company to realize large cost reduction after the design phase. Also at Toyota cost planning\textsuperscript{18} is mainly an effort to reduce cost at the design stage (Tanaka, 1993, 4). Creating cost awareness from the start of the development is one of the main objectives of today’s companies. In addition, today’s product life cycles are tending to become shorter and shorter, also reinforce the supposition that major redesign loses its relevance when a product is being manufactured. These two propositions already support the characteristic that large cost reductions only occur early in the product life cycle.

Butcher and Laker (2000, 50) suggest that the sooner targets are defined in the development process, the better. Target cost, as well as the product concept, should be scrutinized and adjusted during each successive planning phase. Modifications to the product in the initial stages of its development are possible with greater flexibility and at lower cost\textsuperscript{19}. It is easier to design costs out of a product than to figure out how to eliminate them after the product enters production.

So from this characteristic it can be concluded that target costing is mainly used for the development of new products. However, companies who do not launch frequently new products can also implement target costing. In this thesis it is argued that target costing is also useful for existing products in order to be complete and not in order to weaken the characteristic. The main goal of this characteristic: ‘Large scale cost reductions occur early in the product life cycle’ is to point out that the effectiveness of target costing is higher when applied in the early stages of the product life cycle. When target costing is applied on existing products the cost reductions will be of smaller scale. Shank and Fisher (1999, 75) hold the same opinion. Sometimes target costing is defined too narrowly, hence managers may conclude that target costing cannot be applied for existing products and may continue with their current ineffective cost management systems. There are many industries that do not fit the profile of little flexibility in manufacturing costs and short life cycles. For these industries, target costing later in the product life cycle may still be a value-added exercise.

\textsuperscript{18} Cost planning is sometimes used as a synonym of target costing.

\textsuperscript{19} See also figure 2, chapter one.
Ellram (1998, 42) sums up a few reasons why target costing is used for existing products:

- To provide ongoing tracking of actual cost-versus-target cost
- To monitor actual-versus-planned price reductions from suppliers
- To achieve cost reduction in order to pass price reduction onto customers as a product/service matures
- To encourage suppliers to remain competitive
- To measure supply management’s performance
- To meet or beat competitive pricing

4.2. Frequent feedback.

A formal, disciplined review, feedback system allows a company to make corrections or cut its losses before too many resources are lavished on an unpromising design solution. Also Kim (1999, 10) states that an effective communication system is another important element in target costing. The predetermined targets for the company and for each department should be clearly communicated. In this context of the necessity of an effective communication the need for continuous feedback can be situated. Continuous feedback about progress toward targets should be communicated to employees, and this on a periodical basis. Cooper and Slagmulder (1999, 29) suggest that monitoring the progress towards cost targets ensures that the company can take corrective actions as early as possible and that it does not violate the cardinal rule. The disciplining mechanism of target costing includes progress monitoring and validation and the application of the cardinal rule. Because there are multiple checks on target cost in the product planning and design stages, the target cost is typically achieved (Fisher, 1995, 58).

The need for feedback surmounts also according to Monden and Hamada (1991, 23). Soon after the target cost is set, production begins. The performance evaluation is then implemented, because abnormal values usually arise often just after a few months. The performance evaluation of target costing is necessary to examine the degree to which the target cost is achieved. If the target cost is not achieved, further examination is needed to clarify where the responsibility lies and where the gap arises. These investigations also provide valuable insights in the effectiveness of the target costing activities. Also Lee and Monden (1996, 200) argue that a post-audit evaluation of the target cost achievement is needed to test the soundness of the target costing process itself.

Bhimani and Neike (1999, 28) point out that at Siemens basic product components were continuously re-engineered and consequent global cost interactions needed to be monitored and analysed. Carr

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20 The cardinal rule will be explained in detail in subsection 4.6.
and Ng (1995, 356) have found that at Nissan, objectives are always clear in terms of how much, by when, by which department, and how. It is obvious in order to achieve this frequent feedback is a necessity. This need for feedback is also stressed by Weber (1999, 42), who argues that empowering employees with the relevant focus and feedback information is necessary to bring about a cultural change. A change to a context where everybody realizes the implications of his own decisions and takes ownership for the results. At Matsushita they use a standard format for summarizing cost data on a product moving through development. Team members can refer to this document at any time to see the latest estimate of the production cost of the product. **Information is the key enabler of target costing.** Whether it relates to the market, new technology, specific products or processes, or estimated value indicators, information drives the entire process. When relevant and accurate information is sought, shared, and used throughout a company, the integration among functions, across product teams, and between product and process experts naturally follows. Kato and Yoshida (1998, 11) argue that when the target cost objective is commonly shared and accepted, then, it becomes easier to drive team efforts, horizontal and vertical interaction, cross-functional activities, and/or inter-organizational cost management/supply chain activities. Target costing requires managers and engineers to constantly estimate the production cost of a product as it moves through the design process, and they must draw on information from all parts of the organization. In companies that have used target costing successfully, **information flows smoothly** among marketing researchers, product designers, manufacturing personnel, and cost analysis (Kato et al., 1995, 39).

Gagne and Discenza (1995, 18) point out that Japanese companies make sure that employees understand “**how their work is translated into numbers**” which represents the company’s performance. To give some examples: the time that it takes to set up the manufacturing line to produce a particular batch of products, the amount of material that has to be scrapped because of work error,….. Western companies on the other hand use complex, financially oriented yardsticks, such as Return on Investment or Economic Value Added (EVA). Those latter yardsticks are often incomprehensible to workers. As a consequence, the content of feedback can differ between Western and Eastern companies. McMann and Nanni (1995, 337) argue that Japanese companies have a desire to satisfy the market, improve the operation and reduce waste, and integrate and **communicate effectively**. Therefore, measures are in place, such as pre-project objectives and post-project feedback that encourage and result in continual improvement. These measures not only communicate what the organization believes is important to those responsible for getting it done, they are designed in such way that they force upstream work teams to consider the downstream consequences of their actions both internally and externally.
Form the case study research of Kato et al. (1995, 51) the following common target costing theme they have identified can be used:

- **Continuous updating** of projected production costs for the products under development was stressed. Each business followed a formal sequential process in which product costs were estimated at certain critical phases in the process. Daihatsu estimated its production costs upstream and also estimated quality costs on an ex ante basis as it considered trade offs between product features.

Information systems such as target costing support systems must provide cost information anytime the designers require it, and not only at the so-called milestones in the new product development process (Kato, 1993, 41). Today, we also see that companies often are combining their Computer Aided Design system with their cost tables to make an **integrated system** to see immediately what effect an alteration in design will have on the downstream costs of a future product (Yoshikawa et al., 1990, 35).

**4.3. Rationality of the process.**

The target-setting process depends largely on experience and intuition rather than on scientific and objective information (Kim et al., 1999, 4). This is certainly true, to a certain extent. The target setting process is a (perhaps the most important) part of the target costing process, where experience and intuition are extremely important. That is why I have also described the influencing role of target costing (see subsection 4.5.). Employees often have to negotiate at which level the targets have to be set. In this case negotiation can not be seen as bargaining or the result of some power struggle in the company. If we take the entire target costing process into account, rationality is an important characteristic, perhaps apart from the target setting part of the target costing process. Because target costing is a feed-forward oriented system, it cannot rely only on past experience. All information that is feed-forward oriented has to be collected and analysed in a rational manner, otherwise it loses lots of its value. **With rationality mainly discipline is meant. But discipline is not enough.** Therefore, I have opted for the term rationality since a company has to know perfectly what the underlying drivers are, drivers of costs, drivers of value, drivers of price, … . Butcher and Laker (2000, 50) state that a lot of detailed and accurate work is necessary if a company wants to bring target costing to a success.

The rationality of the process also contributes in positive way to the **commitment** employees have to have to their assigned targets. A rational, transparent, and comprehensible process can more easily motivate employees, it can more easily convince them to take up a challenging target. Also Kato (1993, 40) warns that the procedures to compute target profits should be **scientific, rational and**
agreed, otherwise nobody will accept his/her responsibility for achieving the target profit. Pierce (2002, 31) holds the same opinion, the cornerstone of target costing is an understanding that profit targets will be taken seriously and must therefore be seen to have been derived through a process that is rigorous and rational.

Target costing is not and will never be an exact science, it depends on credible data and on people who have the courage to make difficult judgments. Nevertheless, the target costing process has to be a very structured, rational process. This is important because when the company set targets, wishful thinking is not allowed. Fisher (1995, 50) point out that target costing is a systematic process for reducing product costs that begins in the product planning stage. The employees all over the company have to believe in the targets that the company has set. It is a necessity that employees commit them-selves to achieve these targets (create an unalterable commitment). Cooper and Chew (1996, 94) hold the same opinion, target costing involves more than listing targets and projected margins. It is a highly structured product-development discipline, adapted to such specific elements of a company’s strategic positioning as industry pricing dynamics, product complexity and life-cycle analyses, and supplier relations. For target costing to succeed, targets must not only be valid, but people must also perceive them as valid. Targets cannot be the outcome of a political process. The market analysis that yields the target prices, the financial analysis that generates the target costs, and the disaggregation procedures that allocate costs among components and subassemblies all must be trusted. The target costing process must, therefore, be highly transparent. When the company has not a sound and rational target costing process, it can face difficulties in estimating product costs, prices, and volumes. This leads to an ineffective target costing system. As uncertainty increases, variables are estimated with less precision, and the technique becomes less powerful.

In the past designers all too often designed ‘nice-to-have’ features into their products, instead of ‘need-to-have’ features. Each feature has to be (rationally) evaluated whether the value of it really outweighs its costs.

4.4. Target costing mainly focuses on direct/variable costs.

Monden and Hamada (1991, 18) give a reason why target costing has become important in Japan. The main reason is because in Japan the ratio of variable costs to total manufacturing costs has recently increased remarkably (up to 90 percent in the car industry) and the ratio of direct material costs has become extremely important. Therefore, the management of direct material costs by target costing has become an important issue. It is clear that Monden and Hamada consider target costing as an important mean to manage especially direct material costs. Sakurai and Scarbrough (1997, 29) argue that target costing has been widely used to manage direct costs. Lee et al. (1994, 191) state that target
Chapter 4 Characteristics of Target Costing as a Cost Management Tool

costing is primarily geared toward managing variable costs. Target costing does not focus on fixed overhead costs in the same way as activity based costing does; although all cost elements are covered under target costing.

At Toyota the main concern of target costing is the design of new models. The effectiveness of target costing is measured as the **amount of cost reduction that has been realized through design**. Toyota wants to know how design affects costs of the new model. Therefore, other factors that affect cost, including wages and fluctuations in indirect costs incurred by related divisions, must be eliminated from the target costing process (Tanaka, 1993, 8).

Tani et al. (1994, 73) argue, based on a survey they have conducted, that mainly all direct costs are included in the calculation of target costs. But also overhead and depreciation for new investments are frequently included. Development and trial production costs are less frequently included. For these latter cost elements the input-output relationship is not always clear.

Bayou and Reinstein (1997, 31) argue that companies can avoid the complications of allocating indirect variable and fixed costs, by only using prime costs. Those prime costs consist of direct material and direct labour costs. This prime-cost system can be called ‘engineering target costing’. In contrast to engineering target costing, Bayou and Reinstein also give another system, ‘the variable manufacturing target costing’ system. This system uses variable manufacturing costs, direct materials, direct labour, and variable overhead as the general basis for target costing applications. A valid reason exists for excluding fixed manufacturing costs from target costing. Fixed manufacturing costs represent significant funds normally committed for long periods of time, and they cover a plant’s or division’s overall production capacity. These costs are not subject to value engineering procedures.

As already argued cost tables are a very important tool in the target costing process. If the content of those cost tables is analysed it is found that mainly direct costs are included. Costs that are unstructured or semi-structured (for example development and trial production costs) in nature are less frequently included or are sometimes excluded from cost tables.

4.5. Influencing role of target costing.

Hirotomo (1988, 22) argues that Japanese companies use their accounting systems more to motivate employees to act in accordance with long-term manufacturing strategies than to provide senior management with precise data on costs, variances, and profits. **Accounting plays more of an influencing role than an informing role.** Carr and Ng (1995, 362) state that the focus on target costs appears to reflect a greater concern with influencing cost behaviour, rather than with ensuring that cost
information is as precise as possible. Tani et al. (1994, 74) state that sometimes adjustments are made to target costs to reflect the forecasted actual costs. This in order to consider the attainability of target costs. Monden and Hamada (1991, 22) hold the opinion that it is necessary to establish a target cost that is attainable and motivates employees to make efforts to ultimately achieve the cost reduction objective that can be determined by subtracting the target cost from the current cost. However, the company has to be aware that it does not force unreasonable demands on their employees.

This influencing role of target costing surfaces in several aspects. One aspect is negotiation, negotiation during the target costing process is not something uncommon. In this case negotiation can not be seen as bargaining, or a political process. The assignment of targets may not be the result of the organizational power struggle in a company. Of course negotiations are omnipresent in all kind of management disciplines, but negotiations play a very important role in target costing. Several authors argue that the use of target costing often starts in the purchase department. Target costing gives purchase managers clear targets to which they have to negotiate. And this is one of the objectives of that are pointed out in this thesis.

A first point where negotiation plays an important role is the decomposition of the target cost into various functions or components of the product. How much can the design team spend on one function as against all the others? Applying a cost reduction requirement uniformly across all the components or functions of the product simply does not make sense. This would not contribute to the rationality of the process or could even have a negative impact on the commitment to the targets that have been set. Tanaka (1993, 9) states the same, it is impossible to attain a target cost by simply deciding to reduce costs uniformly by x percent for all divisions. A portion of the target cost is distributed to each division. The amount distributed is based on precedent and experience. Discussion between chief engineer and the related division continues until both division and chief engineer are satisfied with the amount distributed.

Gagne and Discenza (1995, 19) suggest that negotiations, about the assignment of target cost to components or product’s functions, may involve the company and its outside suppliers as well as departments that are responsible for different aspects of the product. But Lee (1994, 70) points out that also after the targets are set, negotiation plays an important role. The struggle to achieve target costs takes place in and outside the company. Purchasing people negotiate with outside suppliers about prices of purchased materials and parts. Negotiations also take place among design, engineering, marketing, and other departments in the company, and compromises are made in their efforts to get within the target cost range.

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21 Forecasted actual costs refer to expected costs when every opportunity for cost reduction is considered (= as-if costs; see chapter two)
Chapter 4 Characteristics of Target Costing as a Cost Management Tool

Also the forecasted total medium-term profit has to be divided among the products in the business portfolio. This profit allocation to the various products is often an arduous undertaking that consumes many hours of management discussion before top management announces the final allocations (Kato et al., 1995, 41).

Cooper and Slagmulder (1999, 28) point out that negotiations with the chief engineer and the product designers and major suppliers establish the target cost. The people concerned should consider the target cost reduction objective achievable. It is the number to which the designers will be held accountable for the rest of the project. To maintain the discipline of target costing, the company must manage the size of the strategic cost reduction challenge carefully. The challenge should reflect the company’s true inability to match its competitors’ efficiency. To ensure that this requirement is met, the company must set the target cost reduction objective so that it is achievable only if the entire organization makes a significant effort to achieve it. If the company sets the target cost reduction objective consistently too high, it will not only subject the workforce to excessive cost reduction objectives, risking burn-out, but also lose the discipline of target costing as it frequently exceeds its target costs. Contrary, if the company sets the target cost reduction objective too low, the company will lose competitiveness because new products will have excessively high target costs. The goal of the company here is straightforward, the strategic cost reduction challenge has to be managed carefully, ensuring that the target cost reduction objective is a ‘tiptoe’ objective. Of course, when a company has a well established target costing system, the strategic cost reduction challenge will tend to zero.

4.6. A design is released for manufacturing only when a product’s projected actual cost is equal to its target cost (The Cardinal Rule).

The cardinal rule of target costing – “The target cost can never be exceeded” – is critical to ensuring that the discipline of target costing is maintained throughout the design process. Note that the cardinal rule is applied to the product as a whole. The final target cost can never be exceeded. Target costs of components or functions of a product, will be achieved while others will not be achieved. But success is not determined component-by-component or function-by-function, success is achieved - or not - by the final product’s target cost. Of course in order for the cardinal rule to be effective it is necessary that targets, once they have been determined, can never be altered under any circumstance. This is simply part of the discipline of the target costing process. The real commitment that comes from the established targets is illustrated by Kato (1993, 40). Japanese automobile companies perceive target cost as a commitment. They never expect target costs to change during the development process. Agreed target costs are final.
The cardinal rule can only be violated when the company has to launch a product for strategic reasons, such as to maintain a complete product line or getting the product to market on time. Other examples are flagship products that create market awareness of the company’s name and lead to increased sales of other products, or products that use the next generation of technology. Therefore, costs can become the second most important element in the decisions to launch a product.

A company cannot call a design a success unless it meet the functionality need of the customer, the price demands of the distribution channel, the manufacturability requirements of the plant, and the financial projections of the company. Cooper (1995, 138) states that the cardinal rule is necessary to prevent design engineers saying: “If we just add this feature, the product will be so much better and only cost a little more”. If the target cost cannot be met, the company cannot simply raise the price and launch the product. Such discipline may be painful to the people who work on a project, but it sends an important message to the organization as a whole: that customers come first and that if the company does not create value for them, a competitor will (Cooper and Chew, 1996, 97). In this context, the application of the cardinal rule can also be seen as proactive decision making. A company prevents that a product that exceeds its targets will be produced.

According to Cooper and Slagmulder (1999, 29) the cardinal rule is enforced in three ways. First, whenever improvements in the design result in increased costs, the company must find alternative, offsetting savings elsewhere in the design. Second the company does not launch products whose costs exceed the target. Finally, the company carefully manages transition to manufacturing to ensure that it achieves the target cost. In well-disciplined target cost programs, i.e. rigorous application of the cardinal rule, cancellation of the project due to failure to achieve target costs will only occasionally occur. Worthwhile mentioning is that failures in target cost environments are different in this way from failures in non target cost environments. In the latter products are often designed to have excessive functionality for its sustainable selling price, so products are withdrawn before or even worse, after launch.

From the case study research of Kato et al. (1995, 51) the following common target costing theme they have identified can be used:

- A constant emphasis was placed on profit attainment. Daihatsu managers emphasized that profit attainment is more important than meeting target cost goals. Matsushita learned from experience that merely meeting target costs did not guarantee meeting profit targets.
5. Characteristics in definitions of target costing.

In table 1 I have summed up the most relevant definitions of target costing I have found in the literature. The research is primarily focused on literature published in the period 1990 till 2003. Above I have described several characteristics of target costing and I have examined how those identified characteristics occur in definitions of target costing. When the characteristic(s) occur(s) in the definition I have put an “X” in the corresponding cell(s). I have opted to interpret the definitions in the broadest sense as possible. Sometimes the reason for why I have put an X under a certain characteristic is not always clear. Therefore, with each definition I will give some further explanation, which you can be found in the next section. In some cases a given explanation can also be valid for other definitions. If this is the case the explanation will only be given once.
A system of profit planning and cost management that is price led, customer focused, design centered, and cross-functional. Target costing initiates cost management at the earliest stages of product development and applies it throughout the product life cycle by actively involving the entire value chain.

Target costing is widely regarded as a management technique to cost products based on customers’ perceptions of the product’s worth.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Reference</th>
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<tr>
<td>A system of profit planning and cost management that is price led, customer focused, design centered, and cross-functional. Target costing initiates cost management at the earliest stages of product development and applies it throughout the product life cycle by actively involving the entire value chain.</td>
<td>Ansari, Bell and CAM-I Target Cost Core Team, 1997, 11</td>
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<tr>
<td>Target costing is widely regarded as a management technique to cost products based on customers’ perceptions of the product’s worth</td>
<td>Bhimani and Neike, 1999, 28</td>
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and as a tool for reducing costs over the entire life cycle of a product. It helps companies to set ceiling costs which enable target profits to be achieved.

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<thead>
<tr>
<th>Characteristics of Target Costing as a Cost Management Tool</th>
<th>Cokins, 2002, 16</th>
<th>X</th>
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<tr>
<td>In short, target costing is a technique to manage the future profits of a company. It achieves this by applying discipline in the product development phase of a product’s life cycle.</td>
<td>Cooper and Slagmulder, 1997, 10</td>
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<td>Target costing is a structured approach to determine the life-cycle cost 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.</td>
<td>Everaert, 1999, 35</td>
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<td>Target costing is the process of determining the target cost for future products early in the new development process and of supporting the attainment of this target cost during the new product development process, by providing target costing information to motivate design engineers to realize downstream cost management of future products in order to secure product profitability of the new product when being launched.</td>
<td>Fisher, 1995, 50</td>
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<td>Target costing is a systematic process for reducing product costs that begins in the product planning stage</td>
<td>Horvath, 1993, 3</td>
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### Characteristics of Target Costing as a Cost Management Tool

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<tr>
<td>The target costing process requires the cost-oriented co-ordination of all product related organizational functions.</td>
<td>Horvath, Gleich, and Schmidt, 1998, 16</td>
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<tr>
<td>Target costing is a strategic cost management concept for reducing cost over the entire life cycle of a product.</td>
<td>Kato, 1993, 36</td>
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<tr>
<td>Target costing is not a costing system as such; rather it is an activity which is aimed at reducing the life cycle costs of new products, while ensuring quality, reliability, and other customer requirements, by examining all ideas for cost reduction at the product planning, research and development, and the prototyping phases of production. But it is not just a cost reduction technique, it is part of a comprehensive strategic profit management system.</td>
<td>Kato, Böer, and Chee, 1995, 39</td>
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<td>Target costing is much more than a simple technique of setting targets: It is an integrative mechanism to link the various functional areas of a business into a coherent system</td>
<td>Monden and Hamada, 1991, 17</td>
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<td>Target costing is the system to support the cost reduction process in the developing and designing phase of an entirely new model, a full model change or a minor model change.</td>
<td>Sakurai and Scarbourgh, 1997, 29</td>
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<tr>
<td>What is target costing? It is a process used to set a cost target for a new or upgraded product; when used effectively, it will also improve the design of the product. Target costing uses simple techniques to establish these target costs.</td>
<td>Robinson, 1999, 1</td>
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<tr>
<td>Target costing is a multidisciplinary tool of cost management to reduce overall costs applied at the planning and design stages with cooperation of</td>
<td>Sakurai and Scarbourgh, 1997, 29</td>
<td>X</td>
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Target cost management is concerned with simultaneously achieving a target cost alongside the planning, development and detailed design of new products by using methods such as value engineering.

<table>
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<tr>
<th>Target costing may be defined as the process established to set and support the attainment of cost levels, usually, but not exclusively, expressed as product costs, which will contribute effectively to the achievement of an organization’s planned financial performance.</th>
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<td>Tani, 1995, 399</td>
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<td>X</td>
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<tr>
<td>Yoshikawa, Innes, Mitchell and Tanaka, 1993, 35</td>
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6. Further explanations on the characteristics that occur in the definitions of target costing.

The first definition in table 1, the definition of Ansari et al., speaks about a system. A system consists of several elements. Each element is connected with other elements. In other words, because of these connections that exist between the different elements of a system one element can influence another element. The existence of those influence-connections between the different elements is the main reason why I have put an X under the characteristic: ‘Influencing role of target costing’. Ansari et al. also mention the following: “A system of profit planning and cost management that is price led, customer focused, design centred,…”. An argument in favour of the characteristic: ‘Highly competitive environment’.

In the definition of Bhimani and Neike target costing is a management technique to cost products based on customers’ perceptions of the product’s worth. As a consequence, a company has to have a clear view on the perceptions of the customer. A good understanding of the market is indispensable. Therefore I opted to put an X under the characteristic: ‘Highly competitive environment’. Target costing also helps companies to set ceiling costs. Setting ceiling costs can be interpreted as setting non-changeable limits to a product cost. An X can be put under the characteristic: ‘The Cardinal Rule’.

Cokins argues that a company has to apply discipline in the product development phase of the product life cycle. Applying a disciplined approach allows us to put an X under the characteristic: ‘Rationality of the process’.

In the definition of Cooper and Slagmulder it is argued that target costing is a structured approach….. Therefore, I have put an X under the characteristic: ‘Rationality of the process’. Cooper and Slagmulder also argue that “Target costing is a structured approach to determine the life-cycle cost,…”. The life-cycle cost of a product is not influenced by just one company, no, the entire supply chain influences the life-cycle cost of a product. Therefore, I have put an X under the characteristic: ‘Reducing the cost of products over the entire supply chain’. “A product must be produced…” An argument in favour of the characteristic: ‘The Cardinal Rule’. “… to generate the desired level of profitability…”, desired level of profitability is a little bit vague. The desired level of profitability depends on the demands that shareholder and other stakeholder have. The higher the demands are the tighter the target will be. This can have an effect on the commitment and the behaviour of the employees. Therefore I have put an X under the characteristic: ‘Influencing role of target costing’.
Chapter 4 Characteristics of Target Costing as a Cost Management Tool

Everaert’s definition encloses the following part: “… **supporting** the attainment of this target cost during the new product development process, by **providing target costing information** to **motivate** design engineers to **realize downstream cost management**…””. Supporting the attainment and motivating design engineers are the reason why I have put an X under the characteristic: ‘**Influencing role of target costing**’. Providing target costing information is an argument in favour of the characteristic: ‘**Frequent feedback**’. And realizing downstream cost management transcends the boundaries of the company. So I have put an X under the characteristic: ‘**Reducing the cost of products over the entire supply chain**’.

Fisher defines target costing as a **systematic process**. A systematic process can be interpreted as a clear and transparent set of stages that can be distinguished throughout the entire process. This is the reason why I have put an X under the characteristic: ‘**Rationality of the process**’.

The argument in favour of the characteristic: ‘**Rationality of the process**’ in the definition of Horvath is rather clear. Horvath defines target costing as: “… **a comprehensive set of cost planning and cost control instruments**…” “… cost structures **depending on the market derived requirements**…” is the reason of the X under the characteristic: ‘**Highly competitive environment**’.

“Target costing is a **strategic** cost management concept…” is a part of the definition of Horvath et al. Strategy includes also a set of action plans to obtain certain goals. Actions plans that often have the aim to influence people to do the desired things. So I have put an X under the characteristic: ‘**Influencing role of target costing**’.

According to Tani target costing uses **methods** like value engineering. Methods or procedures contribute to the rationality of the process. This is why an X can be put under the characteristic: ‘**Rationality of the process**’ can be put. Tani also defines target cost management as: “… **simultaneously** achieving a target cost…” Simultaneously can be interpreted as different people of different department working at the same time on the achievement of target cost. Therefore I have put an X under the characteristic: ‘**Cross-functional teams**’.

Yoshikawa et al. state that target costing will **contribute effectively** to the achievement of an organization’s planned financial performance. In order to achieve effectively the financial plans of a company, a company has to achieve its target cost. So the cardinal rule has to be applied. Therefore an X has been put under the characteristic: ‘**The Cardinal Rule**’.
7. Most frequent occurring characteristics of target costing.

The top four of characteristics that most frequently occur in the definitions of target costing is: ‘Influencing role of target costing’, ‘Rationality of the process’, ‘Large scale cost reductions occur early in the product life cycle’ and ‘Reducing the cost of products over the entire supply chain’. In chapter one we already stated that Hirotomo mentions some characteristics of today’s new management accounting environment. One of those characteristics is ‘A behaviour influencing focus’, which is in accordance with the characteristic: ‘Influencing role of target costing’, which occurs frequently in the definitions of target costing. Targets have to be tiptoe objectives. So in order to ensure the commitment that employees have to have with their targets the target costing process has to be a clear, transparent and rational process. This clarifies the importance of the characteristic ‘Rationality of the process’.

8. Condensing all the characteristics into one definition.

Now we know what the typical characteristics of the target costing process are, I have tried to formulate a definition that encloses all these characteristics. The definition encloses three different parts. A first part is the following: “Target costing is a cost management tool used by companies in a confrontational environment, primarily aimed at the early stages of product development, which tries to reduce, usually, but not exclusively the direct product’s costs over the entire supply chain.” This first part encloses the characteristics: ‘Reducing the cost of products over the entire supply chain’, ‘Target costing mainly focuses on direct/variable costs’, ‘Large scale cost reductions occur early in the product life cycle’ and also the characteristic: ‘Highly competitive environment’. A second part of the definition deals with the characteristics: ‘Rationality of the process’, ‘Cross-functional teams’ and ‘The Cardinal Rule’. “It is a rational process, that tries to leverage cross-functional insights, that results in specific cost targets at which a product has to be produced to guarantee the company’s future profits.” The third and final part of the definitions goes as follows: “During the entire process target cost information is being provided to support and motivate design engineers.” The latter part incorporates the characteristics: ‘Frequent feedback’ and ‘Influencing role of target costing.

Add the three parts together and we get:

Target costing is a cost management tool used by companies in a confrontational environment, primarily aimed at the early stages of product development, which tries to reduce, usually, but not exclusively the direct product’s costs over the entire supply chain. It is a rational process, that tries to leverage cross-functional insights and that results in specific cost targets at which a
product has to be produced to guarantee the company’s future profits. During the entire process target cost information is being provided to support and motivate design engineers.


I have derived nine characteristics of target costing. From a literature study I tried to find supporting evidence for those nine characteristics. The characteristics itself can be classified into three categories, the organizational context of target costing, characteristics of the environment of the company and the third category, characteristics of the target costing process itself.

To give a summarizing list:

- The organizational context of target costing
  1. Cross-functional teams
  2. Reducing the cost of products over the entire supply chain
- Characteristics of the environment of the company
  1. Highly competitive environment
- Characteristics of the target costing process
  1. Large scale cost reductions occur early in the product life cycle
  2. Frequent feedback
  3. Rationality of the process
  4. Target costing mainly focuses on direct/variable costs
  5. Influencing role of target costing
  6. A design is released for manufacturing only when a product’s projected actual cost is equal to its target cost (The Cardinal Rule)

I have also examined several definitions of target costing, whether those characteristics occur in the definitions. The top four of occurrence in definitions is the following: ‘Influencing role of target costing’, ‘Rationality of the process’, ‘Large scale cost reductions occur early in the product life cycle’ and ‘Reducing the cost of products over the entire supply chain’.

Because no definition in literature encloses all identified characteristics I have tried to formulate a definition that does. The definition is the following:

Target costing is a cost management tool used by companies in a confrontational environment, primarily aimed at the early stages of product development, which tries to reduce, usually, but not exclusively the direct product’s costs over the entire supply chain. It is a rational process, that tries to leverage cross-functional insights and that results in specific cost targets at which a product has to be produced to guarantee the company’s future profits. During the entire process target cost information is being provided to support and motivate design engineers.
1. *Introduction.*

In the previous chapters an extensive literature review has been done. Form that literature review nine characteristics have been deducted. In this chapter I have examined how those characteristics occur in real business environments. In several companies a case study was performed. The structure of each case study is based on the nine characteristics identified above, except the case study of Recticel, which is more a description of its confrontation with target costing. In each case I have tried to describe how each characteristic occurs in that specific company.

In the second section the *research set-up* towards the case study is given. Section three deals with the used *case study method*. The fourth section describes *how the companies were selected*. The first selected company is Bekaert. Within Bekaert I investigated the use of target costing in two different business units, *Bekaert Steelcord* and *Bekaert Fencing NV*. The latter is part of the business unit Bekaert Fencing Europe. Both business units are examined in section five. The usage of target costing in *Daikin Europe NV* is further explained in section six. Target costing is not the basic philosophy of *Recticel*. But Recticel is confronted with target costing as part of a supply chain in which there are companies who are using target costing. This interesting aspect is fully investigated in the seventh section.

2. *The research set-up.*

To begin with the purpose of this case study. The general management question in this thesis is: “What are the characteristics of target costing as a cost management tool?”'. This management question can be specified in a research question: “Do the characteristics, deducted from literature review, also occur in real business environments?”'. To get an an answer on this research question I have conducted a case study in some companies. Before explaining the case studies, the case study research method will be explained.
3. The case study research method.

Case study research excels at bringing us to an understanding of a complex issue like target costing and can extend experience or add strength to what is already known through previous research. The emphasis of case studies is a detailed contextual analysis of a limited number of events or conditions and their relationships. Researchers have made wide use of this qualitative research method to examine contemporary real-life situations, real business environments and provide the basis for the application of ideas and extension of methods. Researcher Robert K. Yin (1984, 23) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.

Critics of the case study method believe that the study of a small number of cases can offer no grounds for establishing reliability or generality of findings. Others feel that the intense exposure to study of the case biases the findings. Some dismiss case study research as useful only as an exploratory tool. Yet researchers continue to use the case study research method with success in carefully planned and crafted studies of real-life situations, issues, and problems. Reports on case studies from many disciplines are widely available in the literature.

When conducting a case study research, researchers must ensure that the study is well constructed to ensure construct validity, internal validity, external validity, and reliability. Construct validity requires the researcher to use the correct measures for the concepts being studied. Internal validity demonstrates that certain conditions lead to other conditions and requires the use of multiple pieces of evidence from multiple sources to uncover convergent lines of inquiry. The researcher strives to establish a chain of evidence forward and backward. A case study describes a certain real-life situation so complete as possible, which contributes to the internal validity. External validity reflects whether or not findings can be generalized beyond the immediate case or cases, the more variations in places, people, and procedures a case study can withstand and still yield the same findings, the more external validity. Techniques such as cross-case examination and within-case examination along with literature review helps ensure external validity. Reliability refers to the stability, accuracy, and precision of measurement. The case studies were also read by the person I had contact with, this to eliminate interviewer bias and to enhance the reliability. Exemplary case study design ensures that the procedures used are well documented and can be repeated with the same results over and over again. How useful a case study may be, it cannot be more than an indication of certain explanations and solutions of a real-life situation (De Pelsmacker and Van Kenhove, 1999, 47).
4. **The selection process of the companies.**

Like De Pelsmacker and Van Kenhove (1999, 47) point out that the case study research method is not a very structured research method, there are not any formal procedures of how to conduct a case study. This was certainly true in the selection of companies. How did I find companies that use target costing? The most important manner you could say was contacting my three F’s, Friends, Fools and Family, supplemented with own knowledge of companies that could use target costing. For example, companies who have important relationships with Japanese companies. I thought that in those companies I had a greater chance finding applications of target costing methods. In order to contribute to the external validity of the case study research, I have opted to select companies from different industries.

Most of the companies were first contacted by phone. After presenting myself I asked if they applied the target costing concept. In many cases the person on the phone did not understand what I was talking about. Therefore, I explained in short on the phone what I meant with target costing. “*Target costing is a cost management technique, that is mainly used to reduce the product cost in the design and development phase of product. A company sets specific cost targets which should be attained before a product can be produced in series*”. If the person still could not answer my question: “Do you apply the target costing concept in your company?” I proposed to send him/her an email with some more information. In that email I explained again the purpose of my research and added in the appendix some articles about target costing together with a copy of the literature review, more specific chapter one till four of this thesis. If they applied target costing their cooperation with the research was asked. When the company was willing to cooperate an appointment for an interview was made. Three companies were willing to cooperate: Bekaert, Recticel and Daikin Europe. Within these selected companies one or more persons were interviewed. In appendix 1 you can find a list with the appointments that were made and the interviewed persons.

I have also contacted some companies only by email. A copy of the email sent to the companies can be found in appendix 2. For example, Masquito Aircraft NV was contacted by email. They replied that they do not use target costing, but they have discussed using it. However, since Masquito Aircraft is a small company that has not a saleable product yet, their main focus is financing their company. You can find a copy of the returned email in appendix 3.

Before the visit to the company a guideline with questions for the interview and the literature review of my thesis was sent to the person by email. A copy of that guideline can be found in appendix 4, the guideline is as you can see in Dutch because the conversation was in Dutch. The guideline was not a strait-jacket. In general, the usage of target costing was discussed during the interview. From that
interview I tried to distil the relevant information that supports the characteristics of the target costing concept.

5. Bekaert N.V.

5.1. Company profile.

Bekaert is a technology-driven business which produces and markets a wide range of products based on metal transformation and coating technologies. The group's activities are built around four business units: Wire, Bekaert Fencing Europe, Steelcord and the fast-growing Bekaert Advanced Materials (BAM). Bekaert has grown from a small manufacturing and trading company, founded by Leo Leander Bekaert in 1880, into a global group with its head office in Belgium. Starting in Western Europe, the group moved to North America and Latin America and has been expanding rapidly in Asia in recent years. Much of the group's growth has been built on steel cord for radial tyre reinforcement. Bekaert now has 96 production centres in 29 countries and an extensive network of sales offices and agencies. In 2001 the consolidated companies, joint ventures and associates generated sales in excess of 2.8 billion euros and employed 17,461 people.

The Bekaert Fencing Europe business unit designs, develops, produces and markets woven and welded mesh products for the garden and agricultural markets, security fencing systems and products for industrial applications and material handling systems. The product range includes complete garden and industrial fencing systems, posts and gates and other products such as glass reinforcement mesh, Flornet, mink netting, Armapipe, Weldmesh panels and wire containers. Bekaert Fencing N.V., is part of Bekaert Fencing Europe.

The business unit Steelcord develops, produces and markets steel cord products for polymer reinforcement worldwide. Tyre cord and bead wire are used for reinforcement of truck and car tyres. The product range also includes high-pressure hose reinforcement wire, conveyor belt cord, woven steel cord, fine cord for transmission belts and sawing wire. Steelcord generates sales of about 700 million euros and produces about 280,000 ton steel cord, mainly tyre cord.
5.2. Bekaert Fencing N.V.

Contact: Frankie Descamps, Financial Controller, Bekaert Fencing N.V.

5.2.1. The organizational context of target costing.

5.2.1.1. Cross-functional teams.

The characteristic of cross-functional teams certainly occurs in Bekaert Fencing NV. Engineering, marketing, sales, production, finance, product development all of them are involved during the process. Considering different point of views brings a positive contribution to possible solutions of problems. Of course bringing together those different point of views can cause discussions. When people discuss about things they tend to question every little aspect of the problem. For example: “Is this part really necessary?”. Discussion has to be seen as progress to a certain goal. During the process you still have to maintain a good pace, avoid endless discussions. Spend the necessary time on the relevant issues, but make sure that you make a timely decision. Not every department is always involved during the process. For example the finance department will become more involved when cost calculation is necessary.

Cross-functional teams are also necessary because there cannot be one person who has an overview over the entire project. There exists a certain synergy between departments, which can surface in cross-functional teams. In Fencing they have also experienced that not solely designers can come up with good design ideas. It is possible that designers overlook the most obvious, simple solutions. Other persons from other departments can also have good ideas, is just a question of canalising those ideas to the right places in the company.

You could also say that Fencing has learned it the hard way to use cross-functional teams. In the past they developed a product, a rose fence. That rose fence completely originated from the marketing department. The rose fence consisted of multiple pieces which have to be fixed together with a specific part. What was the problem? The part that was responsible for fixing the other parts together was to weak. So the engineering department had to intervene, they had to develop a stronger part. But the company had already bought a large amount of those weaker parts, which implied higher costs.

5.2.1.2. Reducing the cost of products over the entire supply chain.

For Fencing distribution is an important cost element in the supply chain. In some distribution-channel logistics accounts for 30 percent of the total cost, as much as the added cost in production. In other
words, for Fencing distribution is an area where it is very interesting to realize cost reductions. To give an example, Fencing have outsourced their warehousing to ‘Katoen Natie’, so more fixed costs became variable. It was important that those costs become variable in order to become independent of seasons. Fencing has a good and mutually beneficial relationship with Katoen Natie. In the beginning about ten people of Fencing worked in Katoen Natie, in order to optimize the procedures, to familiarize Katoen Natie with the product range of Fencing. Today only three people of Fencing works in Katoen Natie. Fencing and Katoen Natie also share information about cost structures, which they examine in detail. You could say they apply activity based management. Fencing has also forced them to use SAP-software. This way information could be shared more easily between the companies. It is clear that Fencing has power over Katoen Natie, otherwise they could not force them to use SAP-software.

Fencing is also in a situation where for certain important raw materials there are only a few suppliers (main reason is the consolidation in the steel-industry). Therefore, Fencing is continuously looking for new suppliers and alternative products. Otherwise the suppliers would gain power over Fencing and raise their prices. Nowadays they look for new suppliers in Eastern Europe, Asia and other continents. In the most situations they close contracts of one year with suppliers of important raw materials. Of course Fencing has also suppliers who are almost for the full hundred percent dependent on Fencing. It is obvious that Fencing has power over those suppliers.

The established target costs are here more used as a reference point, to which purchasers have to work to. There is not a real supplier interaction in the design of products. It is however possible that they have valuable suggestions. If this is the case it is just a matter of canalising these suggestions to the right places.

The importance of reducing the cost over the entire supply chain surfaces also in the fact that after sales service is another important cost element. Fencing guarantees that they can resolve within 72 hours any problem anywhere in Europe. This cost element is often underestimated.

5.2.2. The environment of the company.

5.2.2.1. Highly competitive environment.

Fencing is mainly located in Europe, with also some connections in China. Fencing as a big European market player is mainly confronted with smaller regional located competitors. Those smaller competitors have mostly the advantage of lower distribution costs, because they only sell products to their specific regional market. Sometimes they have cheaper labourers at their disposal. So they can deliver substitute products at lower prices, but in most cases those products have lower quality.
Fencing has to compete with them by delivering high quality products and a complete product range. Delivering a better service can also be a reason to choose for Fencing and not for the smaller competitors. Fencing is able to deliver the exact quantity at any time you want. This in contrast with for example the smaller Chinese competitors, who only deliver full containers and are not that flexible in deliver times (very long lead times). Sometimes Fencing has to make the choice between making themselves the product, buying the product from those smaller competitors or just retreat from that regional market because Fencing cannot compete with the small local companies. Fencing will only buy products from the local companies when customers have not such high demands on quality.

5.2.3.  The target costing process.

5.2.3.1.  Rationality of the process & The Cardinal Rule.

A specific product where Fencing applied the target costing concept was a sliding gate. In the past you could see the roll system and engine on the outside of the gate. The aim of the project was to integrate that engine and roll system in the underbeam of the gate. So it was mainly an aesthetic aspect that was considered. Again a cross-functional team was responsible for the project. A cross-functional team where the product development department took the lead. Given that new product, a sliding gate where the roll system was integrated in the underbeam, a market price was estimated. From that market price they subtracted their profit margin, based on their expected return on investment (ROI). This gave them a target cost. The way the target cost is calculated is comparable with the deductive method.

When Fencing launched the sliding gate, its target cost was not achieved. So the cardinal rule was violated. Within Fencing the main reason why they did not apply the cardinal rule is the high investments they already had made. For example the project of the sliding gate began three years ago, and last year the gate was launched on the market. Of course, it makes sense that when you already have spent some time on a certain project and when you have invested already a lot of money. Then it is difficult to throw an entire project in the garbage-box when at the end it appears that the target cost is not achieved. The investments made are sunk costs. The most important decision criteria is the comparison of the further cash costs with cash incomes. Do the future cash incomes offset the future cash costs?

Important to point out is that the targets are still used during production, people have to continue working on the achievement of the targets. An important element why the target cost were not achieved was that the expected selling price was overestimated. Customers were not prepared to pay as much for the integrated roll system and engine than expected. This was considered as one of the disadvantages of target costing. There exists some uncertainties concerning expected selling price, like...
the behaviour of the competitors, the strategy of the competitors, etc. Surely for new product or production techniques there are uncertainties. Target costing is not a mathematical model. Therefore the characteristic ‘Rationality of the process’ is important. Clear and transparent procedures of target costing have to be developed, in order to reduce those existing uncertainties. One element that can contribute to the rationality of the process is experience. The more you use the target costing concept, the more you get familiar with it and the lesser uncertainties exist. In Fencing target costing is not applied for a very long time, so experience has to be build up.

5.2.3.2. Large scale cost reductions occur early in the product life cycle.

It is certainly true that large cost reductions can be realized early in the product life cycle. For example, Fencing redesigned a specific fencing panel. The redesign was quite simple since only a minor change was made to the mesh of the fencing panel. That allowed them to produce those panels at a much lower cost and in addition it also allowed them to use a certain post. The post itself was more expensive, but the installation of the fencing panels was much easier and quicker, which ultimately had a positive effect on the value created for the customer.

5.2.3.3. Frequent feedback.

Feedback plays a major role when the targets are not achieved. In this case, the people who are responsible for the achievement of the targets have to report the reasons for the failure, and propose corrective actions that will have to be taken. Fencing also gets feedback from customers concerning product usage, product failure, etc. For example, Fencing had a product on the market, fencing panels with specific pots. Some customers had experienced that it was possible that when you removed a part from the pot it was easy to remove the whole panel. Of course this is a major failure of the product, so it had to be reviewed and adjusted. For projects that require high investments a market study often is conducted. For smaller projects the voice of the customer is heard through the sales people, who are in close contact with them.

5.2.3.4. Target costing mainly focuses on direct/variable costs.

Fencing includes all costs in the target cost except depreciation because depreciation cannot be changed. You could sell for example a machine but as a consequence you lose capacity.
5.2.3.5. *Influencing role of target costing.*

At Fencing the achievement of targets is connected with the remuneration of employees. So the target costing system is surely behavioural focused. Every employee has to perform on some key performance indicators (KPI). Cost targets can be part of those KPI’s.

5.3. *Steelcord.*

**Contact:**
* Bart Vandecappelle, Manager Finance & IT, BU Steelcord
* Luc Sabbe, Manager Product & Process Development, Technical Department

5.3.1. *The organizational context of target costing.*

5.3.1.1. *Cross-functional teams.*

An important factor that has a big influence on the product cost is the way the product is produced. What kind of machines will be used to produce the product, the layout of the plant, etc. Bekaert develops its own machines. A separate department develops those machines and then sells them to others at cost price plus a mark up. In the past they experienced that machines tend to be over-engineered and tend to present too much functionalities. Nowadays there is a better collaboration between the different departments, which can be viewed as an argument in favour of the characteristic of cross-functional teams. There is a feedback loop from departments that use those machines. They give information about how the machines are used. So the developers get information of what kind of functionalities of the machines are not used. This is valuable information for the development of future machinery.

Steelcord argues that a better cross-functional collaboration, an integration between the different departments is one of the most important improvements they have realized the last 15 years. Another important achievement is the continuous improvement made on the operations of the different plants.

5.3.1.2. *Reducing the cost of products over the entire supply chain.*

Product development in Steelcord is mainly based on making varieties on the same product. For example making steel-wire more lighter or using other chemicals in the products. This is important, because the weight of the tyre plays an important role in the fuel consumption of cars. During the product development, the technical department of the customer works closely with the technical department of Steelcord. They come up with several alternatives and go further on the most appropriate one. For example making the steel cords lighter or bunch them together in a specific manner will perhaps result in a product that is more expensive to the customer. But that expensive
product will lead to lesser rubber that has to be used. So the total product’s cost can be reduced over the entire supply chain.

Steelcord is concerned with the entire supply chain of which they are part of, also when they set their ROI. Steelcord tries to set an ROI that is not to greedy. Setting and realizing a high ROI would of course be beneficial for Steelcord but it would probably also attract more competitors. A high ROI would also mean a higher price which of course could harm sales or bring the customers into difficulties.

5.3.2. Characteristics of the environment of the company.

5.3.2.1. Highly competitive environment.

In contrast to the Fencing business unit the Steelcord business unit is a more global player. Steelcord has factories all over the world and also customers from all over the world. The main customers are the big tyre factories like Goodyear, Continental, etc. Those big customers account for approximately 80 percent of the sales. Steelcord is clearly the market leader. Steelcord controls one third of the market. Competitors are mainly vertically integrated companies, like Michelin. Those also account for approximately one third of the market. The other third goes to smaller regional companies. The customers of Steelcord often centralise their purchases, so most of the time the negotiations take place between the head-quarters of both supplier and buyer. Due to the fact that sales of Steelcord are concentrated in those big customers, selling price is given and cannot be influenced by Steelcord. Also the setting of the ROI can be touched here. When Steelcord would set a high, greedy ROI it would be beneficial to Steelcord but it would also attract more competitors. And Steelcord assiduously avoids higher competition.

Given the fact that the market price is given, the main driver of the target costing process is not (yet) the market price. Within Steelcord target costing is more driven by production costs than it is by market prices. Steelcord uses more a bottom-up approach, comparable with the adding-up method of target costing. The usage of this bottom-up approach will be explained in the section about the characteristic: 'Rationality of the process’. However, Steelcord argues that its TSP model has brought more consistency in pricing decisions and pricing policy deployment. More long term thinking in the pricing strategy and supporting long term contracts is introduced in the company. Steelcord claims also that they use their TSP model as base for competitive positioning.
Chapter 5 Case Study Research

5.3.3. Characteristics of the target costing process.

5.3.3.1. Rationality of the process.

Steelcord has developed a Target Sales Prices (TSP) model. Building up a model certainly contributes to the rationality of the process. This model calculates a kind of idealised target cost, based upon state-of-the-art manufacturing methods, in which machine and man occupation are balanced in an optimal (cost-efficient) way. The calculation of that target sales price can be compared with the adding-up method of target costing. The target cost for each step in production is calculated an added together.

The production process of tyre cord can be divided in several steps. In a first step the steel cord is being cleaned, the perch removed and so on. A next step consists in pulling that cleaned steel cord through what Bekaert calls a B-machine. That machine reduces the diameter from 5.5 mm to 3.5 mm. The following step is heating the steel cord, in an IPC oven, in order to make it plastically and also to improve the atomic structure. Afterward the steel cord is again pulled through a machine, a C-machine this time. This latter step reduces the diameter to 1.75 mm. That steel cord of 1.75 mm is again heated in an ISC-oven. In this step also a special layer is put on the steel cord. This layer is necessary to ensure adhesion with the rubber of the tyre. The next step in the production process is again reducing the diameter to 0.5 mm - 0.15 mm by wet-pulling. At the end of this step we get a semi-manufactured article. The next important step in production of tyre cord is bunching. During the bunching phase, steel cord is bunched, woven together. The steel cord can be bunched together in lot of different manners. For example a ‘3-9-15’ tyre cord means that in the first step of bunching faze 3 steel cords of 0.15 mm - 0.5 mm is bunched together. In the next step of the bunching faze 9 other steel cords of 0.15 mm - 0.5 mm are bunched around the steel cord obtained from the first step. And in the third step of the bunching faze 15 steel cords of again 0.15 mm - 0.5 mm are bunched around the steel cord obtained from the second step. This process results in a ‘3-9-15’ tyre cord.

Because steel cord can be bunched together in a lot of different ways, it is important to have already cost awareness at the design stage of the production process of that bunching phase. And it is in this area where target costing plays a major role in Steelcord. In the design of the bunching process we have to consider what kind of machines that will be used. Trying to find an economic optimum of machine efficiency and man efficiency. This optimisation between machine efficiency, man efficiency and costs can be explained with the following graph in figure 11. In the graph an optimum can be defined, in which costs are minimised. The optimum defines also the number of machines used in the process and from which we can deduct machine and man efficiency. Other factors that have to be taken into account in the design of the production process are for example: what size of spools will

23 Machine efficiency = Run time / (Run time + Stand Still time)
be used? Which technology will be used? It is not always necessary to use the latest or newest technology. It is possible that older technology can produce it at a lower cost than newer technology. Also the region where the steel cord is going to be produced is very important. In Western countries labour unions demand equal work load for every employee. So in the design of the production process you have to make sure this is guaranteed. The price of electricity can also vary between countries. Since these factors all influence a product’s cost, they have to be taken into account. Knowing what their relationship is with a product’s cost is very important.

Another aspect that has to be taken into account when designing machinery is the impact of the regional factors. For example, in China labour is cheaper than in Europe. A machine can be designed to have small or big spools where the steel wire is wounded round. Small spools mean that you have to have more people who remove the full spool and replace it with an empty spool. So machines that are going to be used in China will rather have small spools than machines used in Europe. The used technology depends on the region where it is going to be used.

![Figure 11: Optimisation between machine efficiency, man efficiency and costs.](image)

After designing the most optimal bunching process you can calculate the target cost of the product, by just adding all the different costs of each step in production together. Then a profit margin based on a reasonable ROI (between 10 and 15 percent) is added. This gives us finally a target sales price. In chapter 2 it was also argued that in the adding-up method costs are the dominant factor that determines the product price. This increases the risk that the company brings a product to the market that is not price competitive or that returns an unacceptable low profit. Innovative ideas for cost reductions seldom emerge with this method. Steelcord does not agree with this statement.
5.3.3.2. Target costing mainly focuses on direct/variable costs.

The TSP model that Steelcord uses gives us a target sales price. The calculation of that target sales price is a bottom-up approach. Steelcord calculates the costs, adds a reasonable profit margin based on a not too greedy ROI percentage and so come up with a target sales price. In the calculation of the costs indirect costs are also included.

Within Steelcord target costing is mainly used in the design and set-up of factories. In this way target costing has an important impact on fixed manufacturing costs. When Steelcord decides to build up a new plant they start from scratch. Everything, also the indirect costs are being questioned. The targets that are being set for indirect cost are based on best practices of other plants. There exist a similarity with benchmarking. The best performing plant of Steelcord becomes the target for other and new plants of Steelcord.

5.3.3.3. Large scale cost reductions occur early in the product life cycle.

When the ROI is under the expectations, costs are examined in detail. Where and how can costs be reduced? As several times stated above, large scale cost reductions occur early in the product life cycle. Figure 1 in chapter 1 shows that up to 80 percent of product costs are committed in the early stages of the product life cycle. Steelcord does not fully agree, surely a high percentage of the costs are committed in those early stages, but 80 percent is way too high. After the design stage there are still opportunities to realize significant cost reductions.

Steelcord has formulated four rules how to achieve cash cost reduction. They call it also the SURE principle. For what stands SURE? SURE stands for Substitute, Utilise, Reduce price, and Eliminate. The following list explains a little further what Steelcord means with these four terms.

- Substitute: seek alternative methods, materials
- Utilise:
  - Machines (uptime, speed)
  - People (overtime <=> idle capacity)
  - Consumables: consumption
  - Re-use of resources
  - Waste reduction

  Use Benchmarking

  - Reduce price: quotes, value/price, quantities, timing
- Eliminate: what is essential, nice to have, not necessary
When looking at the previous list you see that mainly substitute, reduce price and eliminate are principles that can be used in the early stages of the product life cycle. Utilise is more operational oriented and can be of more use in the stages beginning from production.

5.3.3.4. *Frequent feedback & Influencing role of target costing.*

Feedback on the targets is also very important. Are the targets achieved? If not what are the reasons of the failure? Feedback is important to make achievements of targets visible. If people achieve a difficult target you have to communicate it through the company. So other people see that achieving difficult targets is not impossible. Achieved targets play a role of reference point in the whole company. Also in the evaluation of their TSP model Steelcord came to the conclusion that target costing supports the objectives of their Breakthrough Program, which can be compared with benchmarking. Cost targets from the most efficient plant are valuable reference points. Target costing brings more confidence and commitment in the company. It allows Steelcord to develop a more accurate performance measurement system.

Similar as in Fencing, remuneration is connected with the achievement of objectives. A distinction can be made between individual, group and business unit objectives. Fifty percent of the objectives are financially oriented. Target costs can be part of these financially oriented objectives. Production plants are cost centres so cost targets are a major part of the objectives they have to achieve. The setting of those cost targets is often a process of give - and - take. Targets have to be achievable but they also have to be challenging. When the company would set easy to achieve targets, it would not realise important improvements, the setting of targets and attaching bonuses on the achievement would loose its effectiveness.

5.3.3.5. *The Cardinal Rule.*

When Steelcord is confronted with a question of a customer: “Can you sell me a product X at a certain sales price?” Product X requires a specific bunching process. Steelcord will consider the question of the customer and will then apply their TSP model. As already explained above the TSP-model results in a specific target sales price of the product. This sales price is then compared to the imposed sales price. Is it above or under the imposed sales price? When the target sales price is under the imposed sales price Steelcord will accept the order. In the other situation where the target sales price is above the imposed sales price Steelcord will rather say no to that order. It is possible to generalise this situation. Every time that Steelcord applies the TSP model they will compare the target sales price with the current price on the market. They will also consider possible price erosion in the future, for example 3 percent per year. Who are the competitors in that market and what are they going to do in
the future. What will be the situation when there is over-capacity in the market? Can we stay profitable in that situation? So multiple different scenarios are examined in full detail in order to make the right decision. The general decision criteria, to go on with the investment in that production process, will be: “Can the target sales price be achieved, is the target sales price feasible?” This decision criteria is similar to the cardinal rule. However, in Steelcord not target costs but a target sales price has to be met.

Earlier in this thesis it was argued that target costing allows a company to transmit the competitive pressure from the marketplace to the designers of a company. Well here we have an illustration of the other direction. The comparison of the actual sales price with the target sales price allows a company to transmit the technological possibilities of a company first to the sales people and ultimately to the marketplace. The calculated target sales price gives the sales people a reference point at which they have to try to sell the products. Sales people should not all to easily give in to price reductions. Steelcord calls this technology-push, pushing new technologies to the market. The technology-push view is comparable with the inside-out approach described in chapter 1.

6. Daikin Europe N.V.

Contact: Laurent Vanthournout, Design department, Project Leader


Daikin Industries, Ltd. is a global leader in the manufacture of commercial and industrial use air conditioning systems and holds more than one-third of the market share in Japan. Daikin is also one of the leaders in the fluorochemicals industry, with an approximate 20 percent share of the world market. Daikin boasts an unparalleled combination of mechanical, electronic, and chemical expertise as well as robust R&D capabilities. The company continues to leverage these strengths to create new, innovative products and flexible, highly efficient production systems. Daikin is a dynamic global company with a well-established presence in five major areas: Japan, China, Southeast Asia, Europe, and North America. Thus, Daikin is poised to excel in an increasingly borderless business environment.

Daikin Europe NV is the sales and manufacturing head quarter responsible for the air conditioner sales in Europe, some parts of Africa and the Middle East. The history began in 1972 with the formation of Daikin Europe NV in Oostende, Belgium. Initially, the company operated solely as an assembly and distribution centre for its Japanese parent, Daikin Industries Ltd. Nowadays however, Daikin Europe NV is an advanced and innovative air conditioning equipment production unit, adapting progressively to the ever widening needs of its European and African customers.
6.2. The organizational context of target costing.


In Daikin a product design is the result of collaboration between the different departments. Throughout the entire process every department gets involved. Daikin can be split into two main blocks, manufacturing and sales. The latter buys the products from manufacturing and tries to sell them to the customers. Manufacturing consists of several smaller departments like design, purchase, planning, production etc. In the cross-functional collaboration between the departments you could say that generally the design department takes the lead, surely concerned the development of new products. The design department appoints a project leader. That project leader is supported by other designers. Important to notice here is that major decisions are taken by consensus of all the different departments involved. The design process of a product can be divided into several important stages. At end of each stage a presentation takes place, concerning the progress that has been made, achievement of targets, possible counter-measures, etc. At the end of each stage important decisions have to be made, probably the most important decision that has to be taken is ‘can we proceed to the next stage in the design process?’. That decision can only be taken when there is a consensus between all the departments involved. Robinson (1999, 42) states that target costing has no chance of success if the functions that are going to be involved in making and selling a product are not jointly involved in the development of the product. Within Daikin it is clear that all the departments are jointly involved.

6.2.2. Reducing the cost of products over the entire supply chain.

The purchase department has an important relationship with the suppliers of Daikin. In this situation it is Daikin who sells products to the end-consumer. So Daikin is actually the starting point of chained target costing systems throughout the entire supply chain. Daikin sets targets for the multiple components they need to buy from their suppliers. So suppliers are forced to accept targets at which they should be able to deliver the components.

The purchase department of Daikin has a strategy of working mainly with a limited number of key suppliers. Those key suppliers have build up a mutually beneficial relationship with Daikin. In the past (and also today) key suppliers have made valuable suggestions for cost reduction. Daikin attaches a lot of importance to these suggestions, they try to use and to leverage some of the know-how of their suppliers. Those key suppliers themselves know that they are a key supplier, so in order to make sure that they do not become complacent Daikin still has contact with other (non-key) suppliers. This gives Daikin the opportunity to compare, at any moment, the prices of key suppliers with the prices of other suppliers. When non-key suppliers give a quotation that is substantially lower than the quotation of key suppliers, Daikin will deviate from its strategy and give the non-key supplier the order.
Maintaining contact with non-key suppliers is necessary to keep the pressure on the quotations of the key suppliers.

Suppliers, especially key suppliers are also supposed to give information freely about their cost structures. Daikin wants to have a clear view on the cost structure of the product as a whole. What kind of processes, components, ... are the most expensive? The cost structure of the product has to be completely transparent to Daikin. As a consequence, suppliers have to give exact information about profit margin, production costs, etc. A specific reason why Daikin wants such detailed information is illustrated with the following example: Consider a supplier that gives a quotation for a certain part. That quotation is not based on reality, actually the supplier has wittingly given a very low price only to obtain the order. If Daikin has information about the cost structure of that supplier it will see that maintaining such prices is not feasible. The supplier cannot earn a proper profit if he maintains his price and will ultimately go bankrupt. If this would be the case it is possible that after a certain time Daikin will be confronted with a situation where its supplier raises his prices. These situations are assiduously avoided by Daikin. So the information suppliers have to give is very detailed, in order to give Daikin the opportunity to examine whether the quotations are reliable or not. If the supplier does not want to give that kind information the supplier simply will not be taken into consideration.

6.3. Characteristics of the environment of the company.

6.3.1. Highly competitive environment.

For certain market segments Daikin is clearly the market leader. In those segments Daikin has some sort of power. Daikin claims that it can impose some costs on the market. This is comparable to having (a limited) power over the sales price. For other segments, mainly for products for household appliance, Daikin is not always the market leader and faces competition form other companies. In these segments it is their aim to grow, also by introducing new products. In this area target costing is used to full advantage. The person I interviewed was astonished that there are companies that do not use target costing. Bringing products to a highly competitive market without starting from an expected selling price and then subtracting a profit margin to establishing a target cost was unimaginable to him. He agreed with the statement of when a company has power to set its own prices, the concept of target costing has not to be applied to survive.

6.4. Characteristics of the target costing process.

6.4.1. Large scale cost reductions occur early in the product life cycle.

The image I got of Daikin, was one where the use of target costing was penetrated throughout the entire company. As already mentioned in one of the previous paragraphs the person I interviewed was
astonished that there are companies that do not use target costing. It is clear that Daikin uses design as a major mean to realize important cost reductions. Just to give a simple example: when designing a new product designers always have to try to use as little screws as possible. This reduces in the first place material costs but it also has an impact on the production method. Fewer screws means shorter production time, which ultimately leads to lower costs. Of course designers cannot always reduce the number of screws in the product, a certain amount of screws is necessary for technical reasons.

6.4.2. Frequent feedback.

As already pointed out above, in the design process of new products several sequential stages can be distinguished. Those stages will described more in detail in the section about the characteristic ‘Rationality of the process’. At the end of each stage a meeting with all the departments is organised. At this meeting the progress of the design process is fully discussed: Are the targets going to be achieved? If not, what kind of counter-measures will be taken, in what time span will those measures have effect, etc. At the end of the meeting the decisions are being made concerning moving to the next stage of the process, a decisions where every department has to agree on. Keeping everybody up to date on the progress of the design project is the main goal of those meetings.

Also feedback from customers, distributors, etc. is being considered. Daikin conducts every year a new market study. In that market study Daikin examines how customers perceive and use their products. What suggestions do the customers have, are those suggestions valuable for the company in the future? Not only suggestions or opinions of customers but also opinions of distributors are being asked. What are the aspects we can improve, etc.? Feedback from all the possible aspects that can influence or improve Daikin’s operations is gathered. The importance that Daikin attaches on feedback from customers, distributors, etc. surfaces also from the fact that Daikin conducts every year such a market research and not only when it really needs it. That information is intensively shared across the entire global company. Between affiliates there exist intensively used communication lines.

6.4.3. Rationality of the process.

Since Daikin applies target costing for quite some time now, it has a lot of experience with it. Experience can contribute to the rationality of the process. A short overview of the different stages that occur in the design process of a new product is given: the process begins with a market study. The market study delivers valuable information concerning the functionalities a new product has to have. What are the preferences of today’s customers? A list with the preferred functionalities is in most cases the result of such a market study. This list contains important information for the design department. The design department has to take those possible functionalities into account and has to
Chapter 5 Case Study Research

examine whether those functionalities are technologically possible. After a profound examination the design department comes up with a product concept. This product concept proposal can be considered as the end of a stage in the design process. That product concept is then presented to all the different departments involved. When all the departments agree on the continuation of the project, the next stage can start. That product concept is the basis for the estimation of the expected selling price. After deducting the desired profit margin, which is determined by the top management, from the expected selling price a target cost is obtained. That target cost is then divided between the different components of the new product. When all the targets are set, which is mainly the task of the planning department of Daikin, the design department starts building a prototype of the new product. When the prototype is finished every little aspect is ticked off in order to make sure that everything is taken into account. The realization of the prototype can be seen as the end of another stage in the process. After testing the prototype, which may result in minor (or major) changes, a final design review is held. At that final design review again all the departments gather and give their approval to launch the product on the market and start mass-production.

6.4.4. Target costing mainly focuses on direct/variable costs.

As stated in previous chapters design is the major mean of realizing cost reductions. Within Daikin the designers know what percentage of overhead is allotted to their cost targets. In this way overhead costs are included in the target cost. But it is not the main responsibility of the designers to realize cost reductions on overhead costs. Naturally designers take productivity gains that can be realized in the production process through design alteration into account.

If designers have valuable suggestions, other than design changes, they will be considered by the responsible people. Overhead costs are mainly controlled by other means then solely design. Of course top management will also set targets for overhead costs.

6.4.5. Influencing role of target costing.

Daikin does not have a policy of attaching remuneration to the achievement of targets. Twice a year Daikin awards ‘merits’ to their employees. A merit can be acquired when the employee has performed well on the achievement of his targets the last six months. The person I interviewed found it rather difficult to attach some kind of remuneration to the achievement of targets. Because often it is not one person who is responsible for the achievement of the targets but it is the responsibility of a whole team.
Sometimes employees within Daikin perceive the imposed targets as difficult to achieve, and consider it often as a stress-causing factor. Targets are also used as input to what could be called benchmarking but mainly within the company. The targets of for example Daikin Europe are compared to the targets of other affiliates for example in Japan, China, Asia,… .The lowest target of all the affiliates counts as a clear reference point where everybody should work at and try to improve.

6.4.6. The Cardinal Rule.

The cardinal rule is applied in Daikin, but mainly in the very early stages of the design process. The decision not to continue does not depend only on the non-achievement of the cost targets. Several different factors play a role in this important decision. Factors like strategic importance of the product. For example the new product has to replace his obsolete predecessor. Or the money already spent on the development. There can be certain technical reasons why the target costs are not achieved. And there are many other reasons why a project should be continued. Again I want to stress that the decision to stop a project is a decision where all the different departments have to agree on. Of course Daikin will do its utmost to prevent a certain project from being stopped. This is where those frequent meetings (at the end of each stage) plays a major role. At those meetings, all aspects are discussed. What are the reasons of non-achievement of the targets? Counter-measures will have to be proposed. In what time-span while those counter-measures take place?, etc.

7. Recticel.

Contact: Marleen Rouges, Group Controller Exteriors Business Unit.

7.1. Company profile.

Recticel is a Belgian Group strongly developed in Europe, but also active in the rest of the world. Recticel has 100 establishments in 20 countries. Recticel contributes to your daily comfort with foam filling for seats, mattresses and slat bases of top brands, insulation material, interior comfort for cars and an extensive range of other products for industrial and household applications. Recticel is the Group behind well-known bedding brands, such as Beka, Lattoflex, Literie Bultex, Schlaraffia, Sembella, Swissflex, Superba, Epeda and Ubica. Recticel is driven by technological progress and innovation, which has led to a revolutionary breakthrough with the biggest names in the automotive industry. Recticel has over 11,000 employees, who contributed to the Group achieving sales in excess of the one billion euro mark in 2000.

Recticel’s Automotive Business Line has been the Group’s fastest-growing sector in recent years. One of the reasons is that polyurethane foam is used increasingly in the automotive industry. Moreover,
Recticel has developed a revolutionary technique for the production of innovative, high-quality interior trim products. Recticel’s Automotive Business Line concentrates not only on the more traditional applications for PU in cars, but also on three strategic activities: manufacturing moulded seat cushions, window encapsulation and manufacturing interior trim components or ‘Spray’, named after the unique, patented technology.

Business Line Automotive is divided into three business units Seatings, Exteriors and Interiors. To briefly point out what the main activities are of each business unit. Seating mainly produces foam for the seatings of the cars. The main activities of the business unit Exteriors are window encapsulation and compounding. Compounding is making PU-compounds for internal use within Recticel but these PU-compounds are also sold to external customers. Via window encapsulation Recticel can attach all kind of things on for example rear or front windows of cars. Things like antennas, mirrors, etc. The Interiors business unit’s main activities are producing dashboards, etc.

7.2. How is Recticel confronted with target costing?

Target costing is not the basic philosophy of Recticel. But Recticel is confronted with target costing as supplier to companies who are using target costing. Recticel is an important supplier for car manufacturers. In literature, it is often stated that target costing is often used in the automobile industry. Important products that Recticel produces for this industry are dashboards, window encapsulations, etc. An important characteristic of Recticel’s strategy is: ‘Reducing the cost of products over the entire supply chain’. At the end of this supply chain we have the car manufacturers, they sell their cars to the end-consumer. An important aim of the car manufacturer who uses target costing will be reducing the product’s cost over the entire supply chain. One way of doing this is by imposing cost targets on the suppliers of components. Recticel is part of that supply chain, so it is in this context that Recticel is confronted with target costing.

Because target costing is not the main philosophy of Recticel, it rather uses it by exception. The structure of this case study differs from the former three case studies, in which was tried to find supporting arguments in favour of each specific characteristic. This case study is more a description of how Recticel is confronted with target costing. Where possibly the supporting arguments in favour of a characteristic will be pointed out.
7.3. When does Recticel use target costing?

The usage of the concept of target costing within Recticel is mainly induced by external forces. For example, Recticel produces components for cars. Components like foam, profiles, etc. A new environmental law states that lead may no longer be used in cars. As a consequence, the research department had to develop a new formula for products, which does not contain lead anymore. But with this new formula also a target cost is connected. The formula may not have a higher cost than the old formula. Another example of when Recticel used target costing was in the supplier relation with DaimlerChrysler. Recticel had a long term agreement for window encapsulation with DaimlerChrysler, in that agreement a price was negotiated. But Recticel came to the conclusion that the negotiated price was lower than the actual production price. When the two companies were negotiating they estimated the cost price too low. From further examination of the costs they came to the conclusion that a specific strip that has to be put on the rear window was way more expensive than thought. So they had to find a cheaper solution in order to remain profitable. Applying the target costing concept resulted in a cheaper alternative. A currently running project in Recticel where the concept of target costing is applied is a project where a team has to find a new formula for its polyurethane (PU)-products. PU can be compared with polyvinyl chloride (PVC) but PU has better functionalities. PU is mainly used in dashboards of cars, so an important functionality of PU is that it stays the same colour. Sunshine may not fade the colour of the dashboard. A negative aspect of PU is that it has a higher cost than PVC. The aim of the project is finding a new formula for PU that has the same functionalities of the old formula but with a comparable cost as PVC. So you could say that the cost of PVC becomes the target cost of the project. Making the formula of PU cheaper is necessary in order to remain competitive. The given examples where Recticel uses target costing are all situations where the usage of target costing is induced by external factors. External factors like new laws, prices imposed by big customers, competitive pressure,… . This is a positive argument that supports the characteristic of ‘Highly competitive environment’.

7.4. Cross-functional teams.

Nowadays, Recticel’s projects are almost always approached by cross-functional teams. This is also the case for the project for developing the new formula for PU. The team consists of employees from Recticel’s International Development Centre, sales people, engineers,… . The team is composed according to the need of competences that the project requires. The use of cross-functional teams has known a big evolution the past ten years. Ten years ago you could say that Recticel consisted of several islands of which each island was a specific department. It was very difficult to bridge the gap between the different departments. The different departments did not even use the same software, one department used Excel and the other Lotus. The need for more collaboration between the departments
Chapter 5 Case Study Research

 surfaced by the following frequently reoccurring situation. The sales department often had to make a quotation. That quotation was based on several production parameters estimated by the sales department. When the order was obtained, the production department was confronted with parameters which they never could achieve. So in order to make better quotations the sales department and the production department started to collaborate better with each other. This cross-functional collaboration has grown enormously the last years. Engineers not only have knowledge of developing a product. Nowadays they also have knowledge about the relationships between development and costs. They are becoming more and more cost aware. This is a consequence of the rotation of people between the different departments. So the characteristic of ‘Cross-functional teams’ is certainly applicable to Recticel.

7.5. The relationship with their suppliers and customers, mainly the car manufacturers.

Recticel is an important supplier to car manufacturers as Mercedes, Volvo, Renault, General Motors, etc. Recticel closes long term agreements with these car manufacturers. It goes without saying that those global car manufacturers have power over their suppliers. That power is certainly used in today’s economical environment. Today many car manufacturers are dealing with over-capacity in their production systems. So in order to stay profitable they increase pressure on the prices of components they buy from companies like Recticel. In the long term agreements with Mercedes for example it is stipulated that every year price has to decline with 1 percent. Also the long term agreements with Volvo and General Motors contain a similar clause. Volvo even asks Recticel to present them their action plans for improving their productivity. Productivity gains will then be skimmed by Volvo. So there exists constant pressure on suppliers like Recticel to lower their prices, to become more productive, etc.

Also the relationship that Recticel has with its own suppliers is interesting to mention. Because Recticel faced serious pressure on its own sales prices it had to seek ways to reduce the product’s costs in order to not give in on the profit margin. One way of reducing costs is by increasing the pressure on prices of components that suppliers deliver to Recticel. Due to the increasing pressure on its own sales prices, the purchase department had to be reorganised. Here too, cross-functional insights delivered valuable insights. Another important milestone was the implementation of SAP software. That permitted Recticel to draw queries in a world-wide database of purchase prices. This way, valuable information was obtained. Information about important differences in prices between countries, where and on what components Recticel receives price reductions, etc. Recticel was now able to perform valuable variant analyses and to make better purchase decisions. Recticel increased the power it has over its suppliers.

Characteristics of Target Costing as a Cost Management Tool
In chapter four, we mentioned that Carr and Ng (1995, 359) point out that suppliers are often ranged on a scale going from ‘totally open-book’ companies to ‘downright awkward’ about giving information. In contrast to traditional suppliers who merely supply price quotations, open-book companies provide a complete breakdown of the price of their component material costs, packaging and shipping costs, overheads and profit. A relevant example of an open-book relationship is the relationship that Recticel has with Renault. If Recticel wants to participate in a tender of Renault, they are asked to give a lot of information about their cost structures in advance. For Renault the supplier’s tender is based on two questionnaires. The first questionnaire called ‘Site Information’ was designed to outline the main features of the production plants. This questionnaire is not filled in systematically for each invitation to tender but regularly every two years on average on the occasion of supplier panel committees. This questionnaire may, however, be requested as part of an invitation to tender if the production plant is new and not known to Renault or if it has recently undergone organisational changes requiring an update of the information provided. This questionnaire consists of two sheets:

- Sheet No. 1: Information concerning the main production plant data: revenues, activities performed, main ratios relative to revenues, economic data concerning the region in which the plant is located,
- Sheet No. 2: Information regarding the number of employees in the production plant and the central departments contributing to the operation of the plant, and the average salaries of the various staff categories.

The second questionnaire is called ‘Standard Quotation’ and is presented in a ‘Simplified’ and ‘Complete’ form. Extracts from both questionnaires can be found in appendix five till eight. The simplified version is used during the expertise and development stages. The complete version must be completed when the product-process specifications are clearly defined. This document is updated just before the order of the product. The complete form of the standard quotation is required systematically for each new request for quotation and represents the official reply form for each company. This document consists of six sheets:

- Sheet No. 1: product cost breakdown (this sheet can partly be found in appendix 7)
- Sheets No. 2a and 2b: cost breakdown of purchased raw materials, components and outsourced processing bought locally (Sheet No.2a Local Purchases) and imported (Sheet No.2b Imported Purchases). (Sheet No. 2a can partly be found in appendix 8)
- Sheet No. 3: description of the manufacturing process
- Sheet No. 4: description of specific tooling for processing (IDO sheet)
- Sheet No. 5: specific expenses breakdown
- Sheet No. 6: proposal of product/process improvement for cost reduction

The supplier must also attach to its reply the manufacturing flowchart and the product design drawings.
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8. Summary.

The main purpose of these case studies was to get an answer on the research question: “Do the characteristics, deducted from literature review, also occur in real business environments?” In this summary we cross-compare the occurrence of characteristics of target costing over the different cases. Table 2 summarises the occurrence of the characteristics in the four companies. If the characteristic occurs in the examined company an X is put in the corresponding cell. The more X’s you find in a cell the stronger the characteristic occurs in that specific company. The number of X’s granted is based on the explanation in the following paragraph.

The characteristic: ‘Cross-functional teams’ occurs in the four companies. Within Daikin the importance of cross-functional teams was the highest. In Daikin all important decisions were made by consensus of all the team members. The other three companies also try to leverage some of the cross-functional knowledge, but the power of those teams is not so big as in Daikin. ‘Reducing the cost of products over the entire supply chain’ is another characteristic. The importance of reducing the cost of products over the entire supply chain is recognised by all four companies. However, the situation of Fencing and Steelcord differs from the situation of Daikin and Recticel. Daikin and Recticel are part of chained target costing systems. They are confronted with customers who impose target sales prices, and themselves, especially Daikin, do also impose target cost on their suppliers. Daikin and Recticel also ask and give very detailed information about their cost structure. Fencing and Steelcord are not really part of a chain of target costing systems. But they also try to leverage some knowledge of their suppliers, through a better collaboration. The characteristic of ‘Highly competitive environment’ is to me the least applicable to Fencing. Fencing mainly faces competition from smaller regional competitors. Yes, this competition can be very fierce, but the survival zone is still large enough to position themselves as quality producers who provide a complete product range. This tends more to a differentiation strategy. Of course in the future survival zones can become smaller, so Fencing can be faced with fiercer competition and benefit a lot from the target costing concept. Steelcord operates in an environment where the sales price is given and Daikin and Recticel surely do not have power over sales prices. ‘Large scale cost reductions occur early in the product life cycle’ is a characteristic that surely surfaces in Daikin. Daikin uses design as major mean to influence the product’s cost. Fencing does not apply target costing for very long now, but there is a high potential for reducing cost by design alterations within Fencing’s product range. Steelcord uses the target costing concept in the design phase of the production process, and does not fully agree with the statement that 80 percent of the product’s cost are committed in the early stages of the product’s life cycle. When Recticel applied target costing, design alterations were a mean for reducing a product’s cost. So the potential to realise large scale cost reduction is also recognised by Recticel. ‘Frequent feedback’ is the fifth characteristic of target costing. The way how this characteristic is interpreted in this thesis is totally applicable to
Daikin. Daikin’s design process can be divided in different stages, at the end of each stage a meeting is held where the achievement of the targets is discussed in detail. However, also systematically acquiring feedback from the market is an aspect that Daikin has not forgotten. In the other companies feedback does also occur, but in comparison with Daikin it appeared to me that the intensity of that feedback, concerning target cost information, is not as high as in Daikin. Daikin was the only one who conducted a market study at a regular basis. Daikin’s clear and transparent design process, which encloses clear distinguishable stages, and the TSP model of Steelcord are clearly rational processes. Recticel and Fencing do not use any specific procedures. In the case of Recticel, target costing is not the basic philosophy. And Fencing has not much experience with the usage of target costing. So the characteristic of ‘Rationality of the process’ is lesser applicable in the latter two. ‘Target costing mainly focuses on direct/variable costs’ is a characteristic that does not exactly occur in the examined companies. In the four companies also indirect or fixed costs are included. Also in Daikin indirect costs are attributed to target costs, but designers know that it is not their main responsibility to control that kind of costs. Cost targets or cost reduction objectives can be part of a remuneration system that gives bonuses to employees when they achieve a certain objective. This was the case in Bekaert and Recticel. In Daikin targets were sometimes perceived as stress-causing factor. So the tightness of targets have certainly an influence on the motivation of employees. Each company therefore received two XX’s for the characteristic ‘Influencing role of target costing’. In Fencing the continuance of the project depends on the examination of the future cash cost and future cash incomes, and not on the achievement of cost targets. When Daikin applies ‘The Cardinal Rule’, it will be in the early stages of the product life cycle. Recticel is forced to accept the cost targets that the car manufacturers impose and Steelcord uses its TSP model mainly to obtain a reference point. When it is clear that the reference point is not feasible they will not continue.
### Table 2: To what extent do the characteristics occur in the examined companies

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<th>Reducing the cost of products over the entire supply chain</th>
<th>Highly competitive environment</th>
<th>Large scale cost reductions occur early in the product life cycle</th>
<th>Frequent feedback</th>
<th>Rationality of the process</th>
<th>Target costing mainly focuses on direct/variable costs</th>
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A design is released for manufacturing only when a product’s projected actual cost is equal to its target cost (The Cardinal Rule)
General Conclusion

The emergence of global markets intensifies competition. Intense competition results in market driven sales prices. The environment where companies have to compete in is an environment where there is fierce competition, low profit margins, no more first mover advantages, low customer loyalty, high customer demands, … . Companies understand that products must be innovative, have high quality and low costs right from their initial launching. Otherwise lean imitators will swoop in and introduce their low-cost copycats. Prices are set by markets, so in order to ensure a healthy profit margin, costs have to be managed very effectively. Managing costs is not just a matter of squeezing out fat from the companies’ production, marketing, and distribution activities. It is argued by several authors that 80 percent of the product costs are committed at the design stage. Cost causes and cost occurrence are separated in time. There are time lags between designs about product design and their eventual impact on the recurring costs. A company has to be cost conscious in every stage of the product’s life cycle. There is not one company that can ignore that 80 percent of costs that are committed in the design stage. The product development stage is a real treasure island for cost reduction opportunities. Every company has to realize that cost gains achieved in the earliest stages are substantially higher than in following stages. Cost management is like wringing out a wet towel. The biggest reaction is obtained first, but we must keep wringing. Even when the towel appears dry to touch we must wring it to extract more. So it is obvious that cost management has particular attractions in markets where price competition is intense. Under these conditions prices are more difficult to increase, so cost management can offer a more feasible and controllable option for improving profitability. Effective cost management involves more than reducing a product’s costs. It also includes the identification of opportunities where costs may be maintained, or even increased, in order to generate more profit. Cost management is a relevant issue in all the stages of the product’s life cycle. On the one hand, reducing the cost level by improving design and production techniques while still at the design stage of products and production processes, this activity is also called cost reduction, is an important aspect of cost management. On the other hand, the active search to reduce the downstream costs of an existing product, during production and subsequent stages, is another important aspect of cost management.

Managing the cost of existing products is more feedback oriented, focusing on reducing costs via more efficient production. Managing the costs of future products is more feed-forward oriented, focusing on reducing costs through more efficient product design. In this context, target costing is a fundamental tool in effective cost management. Target costing or genka kikaku has been recognised in literature in the late 1980s, but the concept itself has been around much longer. The first forms of target costing date from the 1900s and were found in the Ford Motor Company. Another company, Toyota, was
using target costing as early as 1963. And this date is often referred to as the beginning of target costing.

Nowadays, we see that there has been a shift from the traditional ‘planning – and – control’ perspective to an ‘Innovation – Kaizen – Maintenance’ operating doctrine. **Target costing is the most important new Japanese cost management tool and it is used as main tool of innovation in the IKM management doctrine.** Companies realize that a competitive advantage based on either low cost or product differentiation is likely to be short lived. Nowadays competitors can move quickly to match new product offerings at competitive prices. There are a lot of imitators who bring me too products so rapidly that companies no longer have the time to build up some brand loyalty, establish a differentiated position or recover some of their development costs. Hence, companies become involved in continual head-on competition, which is also called competing in a confrontational environment. The basic thought of the confrontation strategy is that companies have to compete in terms of the survival triplet. The survival triplet consists of three dimensions that characterize a product: cost or price, quality and functionality. When a company wants to survive, in a confrontation strategy, it has to meet or even outclass its competitors’ performance on all three dimensions. Therefore, a company has to identify its survival zone. For each dimension a company has to identify a maximum feasible price/cost (or quality, functionality) and a minimum allowable price/cost (or quality, functionality). The necessity of a confrontation strategy is the highest when the survival zone is small. When the survival zones are narrow, the customers are unwilling to make significant trade-offs among the three dimensions. As a consequence there is simply not enough leeway for a company to differentiate its products and sell them at a sufficient price premium to justify the increased costs. In a confrontational environment attention must be given to all three the dimensions of the survival triplet instead of concentrating on one dimension. In most cases, one dimension dominates the other two, but companies have to be very agile to be able to change rapidly between the different dimensions. In a confrontational environment a company can not alter its sales price without altering quality or functionality. In such environment the dynamic aspect is of the outmost importance. Technological evolution for example puts downward pressure on the price. Hence, **profitability becomes very sensitive to the effectiveness of cost management.** And this is where target costing has an important role to play, managing the future cost of products very effectively. Target costing is one of the most important new cost management tool in today’s management accounting environment. An environment where a behaviour influencing focus, market driven management and a dynamic and team oriented approach are omnipresent. The primary concern of the behaviour influencing focus is to design a system to influence employees to perform the desired behaviour. Giving the market or customer requirements priority over technological limitations is the underlying thought in market driven management. A dynamic and team oriented approach is mainly focused on bringing together the knowledge and experience of a company.
The willingness to pay of a customer is an important concept in market driven management, the higher the level of performance of a product the higher the customer’ willingness to pay will be. However, it is wrong to think that you have to maximise the performance level in order to maximise the willingness to pay and ultimately to maximise profit. Maximisation of the difference between the cost of the level of technological performance and the willingness to pay (for that product or product attribute with a certain performance level) is the key to success.

It is possible to classify each company in one of the four cost reduction archetypes, based on variables as ‘strong turnaround need’ or ‘no turnaround need’ and ‘weak market orientation’ or ‘strong market orientation’. In the first archetype, product prunning, there may be some occasional use of the target costing concept to confirm the cost of a product. In the second archetype, radical innovation, some elements of the target costing concept could also be used. Continuous process improvement, the third archetype, is an archetype where target costing would not be used as a regular system, but it might be used at very irregular occasions. The fourth and last archetype, continuous market innovation, is the archetype where target costing with all its different facets would be a continual way of life. Today, companies tend to converge towards the continuous market innovation archetype.

It goes without saying that one of the main goals of target costing consists in coming up with a specific target cost at which a product must be produced in order to give the company a reasonable profit on mid-term basis. There exist two important methods to calculate the target cost of a product, i.e. the deductive and the adding up method. The dominant method is the deductive method because it connects the product’s target cost to the target profit set by top management. Nevertheless the adding up method owes its popularity to its simplicity.

The company must work backward from the forces of the market and consumer preferences. They are the ultimate drivers of demand and revenues. This is the basic idea of the deductive method: Target cost = Expected Selling Price – Target Profit Margin. Two important elements have to be reckoned with in this formula, i.e. the expected selling price and the target profit margin. The expected selling price is the starting point for target costing activities. Important to realize is that the selling price is a reflection of a certain level of perceived quality and functionality of a product through the eyes of the customer. In the price-setting process, different kinds of factors have to be taken into account. Internal factors like the company’s long-term sales and profit objectives, the image a company is trying to project via its products, etc. External factors also play an important role. Customer loyalty, expected quality level and functionality compared to competitive offerings, expected price of competitive substitute products, etc. are all examples of external factors. A conclusion that can be made is that at the heart of the price-setting process lies the concept of perceived value. Customers can be expected to pay more for a product than its predecessor only if its perceived value is higher. Several
techniques exist to set a price. Companies often take an incremental approach in the estimation of the target selling price. They start with actual selling price of the predecessor model and adjust this price according to changed functionality or perceived value. Another technique is pricing by functions. The logic behind pricing by functions is that a product price can be decomposed into thousands of elements, each of which reflects the value consumers are willing to pay for that particular element. The addition of the values of each function gives us the expected selling price. The acceptable economic profit, the second important element in the deduction method, will mainly be driven by expected financial returns of shareholders and investors. The computation of the target profit is not something arbitrary, it is a real commitment agreed upon by everybody who has any part in achieving it. The English word ‘target’ does not fully capture the commitment that Japanese managers make in attaining the medium-term profit goal. Hence, procedures to compute the target profit should be scientific, rational and agreed to ensure its credibility. In order to achieve credibility a considerable amount of energy is spent on customer and competitor analysis. Wishful thinking is not allowed, only realistic plans can be accepted. Therefore, companies often use metrics as return on investment, return on assets, return on sales,… to determine the target profit margin, this brings a positive contribution to the credibility of the target profit margin. Another difficult task is allocating the total target profit to the different products in a company’s product portfolio. For this, the management have to imagine a future product portfolio in today’s environment. Again, customer analysis is an important factor: how do the preferences of the customer change over time? Changes that have to be taken into account in order to provide a complete product portfolio that satisfies the needs of the customer but does not confuse them. Profit margins of individual products can differ from each other depending on the realities of the marketplace. It goes without saying that a lower target profit margin for one product has to be compensated with a higher target profit margin of another product. Computer simulation is often used here in order to determine the relationship between selling prices and profit margins. Knowing the two critical elements of the deductive method, the expected selling price and the target profit margin allows us to calculate the target cost. The target cost can be determined simply by deducting from the expected selling price the target profit margin. Highly efficient companies will set target profit margins higher than less efficient companies and will thereby have lower target costs. So the target cost also reflects the company’s relative competitive position, because it is based on its own realistic, medium term profit objectives.

A second method to calculate the target cost is the adding up method. In this approach, target costs are the sum of the broken-out cost components. The target cost for each part, component, or activity is estimated starting from the current cost level and considering all possible cost reductions. A major disadvantage of the adding up method is that it is difficult to provide a logical connection with the profit and business plans. This in contrast with the deductive method where target costing links strategy and profit planning to product cost by determining target costs only after target prices and
profit margins have been calculated. In the adding up method costs are the dominant factor that
determines the product price. A price solely based on inside cost information increases the risk that the
company brings a product to the market that is not price competitive or that returns an unacceptable
low profit. Innovative ideas for cost reductions seldom emerge with this method.

**Information is a key enabler of target costing.** Whether it relates to the market, new technology,
specific products or processes, or estimated value indicators, information drives the entire process.
Feedback information is necessary in order to answer the question: *“Is it likely that we are going to
achieve our target goals?”*. A company has to make a trade-off between accurate information and
cheaper and quicker information. Sometimes a company has to sacrifice accuracy in order to have the
cost information on time. Cost information is mainly cost estimation. The **current cost** or the **ongoing
cost** are cost estimations of the cost of future products based on cost information of existing products.
By taking possible cost reduction opportunities into account, a company can calculate an **as-if cost**.
The as-if cost will be lower as the current cost, because the current cost is corrected with the cost
reduction opportunities. For a company, it is not enough to realize the as-if cost. Actually, filling the
gap, also called **cost gap**, between the as-if cost and the target cost is a major focus of target costing.
The difference between the target cost and the current cost is called the **total cost reduction objective**.
The target cost is only determined by external conditions, it does not take design and production
capabilities of the company and its suppliers into account. In order to diminish the risk that the cost
reduction objective will not be achievable, the company has to identify the achievable and the
unachievable part of the total cost reduction objective. The achievable part can be split into two parts, the
**latent cost reduction** and the **target cost reduction objective**. The unachievable part is called the **strategic cost reduction challenge**. The latent cost reduction is the reflection of the already available
cost reduction ideas. The distinction of the strategic cost reduction challenge is made in order to set the
target cost reduction objective at an optimal level. The target cost reduction objective must be the
reflection of the ability of the product designers and suppliers to remove cost from the proposed new
product. The unachievable part or the strategic cost reduction challenge must tend to zero in order to
maintain the discipline of target costing. Clearly setting the target cost objective and the strategic cost
reduction challenge is not an easy task. Companies have to make sure that those **objectives are real
tiptoe objectives**, achievable objectives but only with considerable effort. In terms of behavioural
implications, setting target cost is as much an art as a science.

**Design changes are the main mean to reduce costs in the target costing concept.** But that is not the
only mean that can be used. To realize the cost reduction objective, a wide range of actions is typically
available, and the choice of which one to follow is limited only by the imagination of the individuals
charged with meeting the target cost. Often actions are classified into different categories. A possible
division is the following: a first category contains actions that alter production levels from current or
expected levels. Production levels influence product costs by allowing fixed costs to be spread over fewer or greater number of units. A second category contains actions that alter the mix of the product’s fixed and variable costs. And the third category contains actions that reduce a product’s fixed or variable costs. An increase in efficiency does not automatically equal cost savings. In order to achieve true cost reduction, a company has to obtain a decrease in concrete resource space, personnel, and machinery. Anything else is a mere shell game, shuffling costs from one use to another, or to idle capacity.

**Target costing provides a powerful mechanism to discipline suppliers** by allowing the company to set the selling prices of the component they supply. Developing target costs for the component that suppliers deliver is the next step once a company has established its target cost. This is also referred to as component-level costing. Component-level costing consists of three major blocks. The first block uses component cost history as the starting point for estimating the new component level target costs. The second applies the company’s supplier-base objectives to the selection of suppliers in general. And the third deals with the selection of the supplier for the given moment. Sometimes, the allocation of target cost to functional areas of the new product is preferred above the allocation of the target cost to components because with component method innovative products seldom emerge with the component method. The basic idea behind the assignment of the target cost is to provide a guideline rather than a straitjacket for designers.

As already mentioned, the perceived value lays at the heart of the price setting process. Perceived value is an important factor that influences the expected selling price. As the expected selling price is the starting point of the target costing process, it is of the utmost importance that the determination is based on **good market research.** In order to get a grip on the evolution of customer perceptions, a company has to conduct a market research on a frequent basis. Both feed-forward and feedback information has to be collected and analyzed. Feed-forward information elicits customer attitudes. Attitudes reflect what customers think they want and would be willing to pay for. Feedback information encompasses actual decisions. Market research does not only have to have a customer focus but also a competitor focus. Competitor analysis is closely linked with customer analysis. Market research has to result in a valuable knowledge about the market wherein the company operates. Several methods exist to collect market information, customer panels, customer value surveys, face-to-face interviews, market statistics, conjoint analysis, etc. are just a few examples. The company has to choose that approach that reveals the deeper patterns of customer preference. Making sure that they do not make the mistake to overemphasize the market which could lead to extreme market segmentation and confuse the customer.
When a company considers different design alternatives **cost tables provide valuable information.** Cost tables provide answers to what-if questions relating to product design alterations. Cost tables are databases of detailed cost information based on various manufacturing variables. These cost tables are used in companies to project product costs assuming the use of different materials, different manufacturing methods, and different functions. There are several kinds of cost tables. One distinction that is often made is the distinction between ‘**design cost tables**’ and ‘**manufacturing cost tables**’. The basic content of the manufacturing and design cost tables are the same. The difference between the two are the purposes for which they are used and also the inputs between the two can differ. Such as the number of cost drivers can vary between the two types of cost tables.

The purpose of **value engineering**, another supporting technique of target costing, is to increase a product’s value. Value defined as the functionality of a product divided by its costs. To give an example of value engineering, a specific part of a product will be replaced by a cheaper mass-produced part if the performance of the product stays the same. Value engineering is conducted differently at different companies. Value engineering is perhaps more an art than a science. Its success depends on high degrees of creativity and lateral thinking. Value engineering primarily focuses on product functions and only secondary on cost. The motivating force behind value engineering is to ensure the product achieves its basic function in a way that satisfies the customer at an acceptable cost. Although there are no formulas or manuals for value engineering, three Nth-look approaches can be distinguished. The first one is **zero-look value engineering**. In this stage the basic concept of the product is developed and its preliminary quality, cost, and investment targets are established. Its objective is to introduce some forms of functionality that did not previously exist. Unlike zero-look value engineering, which seeks new forms of functionality, **first-look value engineering** focuses on the major elements of the product design and is defined as developing new products from concepts. First-look value engineering enhances the functionality of a product by improving the capability of existing functions. The objective of **second-look value engineering**, unlike that of zero- and first-look, is to improve the value and functionality of existing components, not to create new ones. Consequently, the scale of changes is much smaller than for zero- and first-look value engineering.

**Functional analysis** is closely linked to value engineering. Functional analysis is a cost management system that focuses 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. Functional analysis does not only assist in identification of cost reduction opportunities but also focus on the possibilities for improving products or services by adding new functions. Functional analysis consists in seven basic steps in the actual technique of functional analysis. These seven steps are: choose field of analysis, gather information, draw a functional family tree, evaluate the relative value of the functions, suggest alternatives for improvement, make a final decision, and audit the actual results. Potential
benefits of functional analysis are: instilling cost consciousness within the functional analysis team. Also accumulating a bank of historical data and a better understanding of where and how costs are incurred within the production process are benefits of functional analysis. Functional analysis can also be integrated in a system of responsibility accounting and act as a control mechanism for their work.

Given the necessary background of the target costing concept, I have tried to identify **nine different characteristics of target costing** from English written literature. These nine characteristics can be divided in three main categories, **the organizational context of target costing, characteristics of the environment of the company** and **characteristics of the target costing process**.

The first characteristic, **‘Cross-functional teams’**, can be classified in the first category, the organizational context of target costing. A company that uses target costing has to stimulate the multidisciplinary cross-fertilization of ideas, resulting from different individuals working together. This cross-fertilization often occurs in an extremely supportive environment. An environment that encourages open channels of communication, where information and views flows freely upward, downward and across the entire company. Vertical and horizontal interaction or the interactive control concept is here a relevant issue. Companies that are competing in a confrontational environment have to balance all three characteristics of the survival triplet (cost/price, quality and functionality). Therefore, multidisciplinary teams are indispensable. Design is a major mean in the target costing concept. When a company considers design alternatives, the company must evaluate the design alternatives for their implications not only for the final product but also for all the processes involved in making the final product. People with a broad range of functional perspectives must evaluate the options concurrently to ensure that benefits in one area do not cause problems elsewhere. A design that addresses the concerns of everyone on a cross-functional team is likely to be far better than a design that addresses the concerns of only one particular function. People all to easily think that target costing is straightforward: You start with the selling price of the product minus the profits you desire to determine the money you can spend to produce it. But arriving at the right numbers requires intense co-operation among all groups involved in product development. Cross-functional teams create a common language among the team members and even among the suppliers. Cross-functional teams also create a common goal to work toward. Target costing is an active component that transcends the narrow boundaries of particular functional areas in a company.

The second characteristic of the organizational context of target costing is **‘Reducing the cost of products over the entire supply chain’**. By planning the target costs throughout the entire value chain, target costing yields a valuable strategic and competitive advantage for all participants. Chained target costing systems create downward pressure over the entire supply chain. Effective target costing requires co-operative, non-adversarial relationships with both suppliers and customers. A supplier-
buyer relationship is a commitment by the customer and supplier, regardless of size, to a long-term relationship based on clear, mutually agreed objectives to strive for world-class capability and competitiveness. The company has to exile the misconception that target costing is just another way of squeezing suppliers for lower prices, even if it means lower profits for suppliers. Trust backed with a commitment of both the company and its suppliers to long-term relationships is indispensable. Considering the entire supply chain allows a company to leverage some of the supplier’s expertise. Suppliers of the supply chain are often ranged on a scale going from totally open-book companies to downright awkward about giving information. In contrast to traditional suppliers who merely supply price quotations, open-book companies provide a complete breakdown of the price of their component material costs, packaging and shipping costs, overheads and profit.

The characteristic ‘Highly competitive environment’ can be classified in the second main category, characteristics of the target costing environment. Target costing typically occurs in a competitive environment, in which companies differentiate their products on the basis of quality, service, time to market, support, product functions, and features. In such an environment, the product price becomes a statistic that summarizes the market’s judgment on the particular package of quality, service, support, time, functions, and features bundled into a product. Sales price is market driven and hence non-controllable, but costs are controllable. Competing and winning today is no guarantee that a player can compete and win tomorrow. Business as usual is not a characteristic of target costing. When a company has to compete in a confrontational environment certain realities exist. Profit margins are low, customer loyalty is low, first mover advantages are small, and products that are launched outside their survival zones fail dramatically. An environment of time-based competition, the rate at which functionality can be improved, is omnipresent in today’s business life. The rapid obsolescence of products is one of the most contemporary trends. The types of products vary and product life cycles become shorter. These factors necessitate frequent model changes and the ongoing introduction of new products. Therefore, the product-design stage has become very important, a stage where target costing plays a major role as an effective cost management tool. Nowadays a company has to be able to bring a product to the market that is carrying the right price and functionalities ‘since day one’ of the launch of the product.

The third and last main category, characteristics of the target costing process, contains six characteristics. The first one is ‘Large scale cost reductions occur early in the product life cycle’. It is easier to design costs out of a product than to figure out how to eliminate costs after the product enters production. Today the product life cycles, which are tending to become shorter and shorter, also reinforce the supposition that major redesign loses its relevance when a product is being manufactured. Creating cost awareness from the start of the development of a product is one of the main objectives of today’s companies. The main goal of this characteristic ‘Large scale cost reductions
occurs early in the product life cycle’ is to point out that the effectiveness of target costing is higher when applied in the early stages of the product life cycle. When target costing is applied on existing products, the cost reductions will be of smaller scale.

The second characteristic in the last main category is ‘Frequent feedback’. In the target costing concept there exists a need for continuous feedback. Continuous feedback about progress toward targets should be communicated to employees, and this on a periodical basis. An effective communication system is an important element in target costing. The predetermined targets for the company and for each department should be clearly communicated. The performance evaluation of target costing is necessary to examine the degree to which the target cost is achieved. If the target cost is not achieved, further examination is needed to clarify where the responsibility lies and where the gap arises. These investigations also provide valuable insights in the effectiveness of the target costing activities. Information is the key enabler of target costing. Whether it relates to the market, new technology, specific products or processes, or estimated value indicators, information drives the entire process.

The third characteristic in this category is ‘Rationality of the process’. With rationality mainly discipline is meant. But discipline is not enough. Therefore, I have opted for the term rationality since a company has to know perfectly what the underlying drivers are, drivers of costs, drivers of value, drivers of price, … . Because target costing is a feed-forward oriented system, it cannot rely only on past experience. All information that is feed-forward oriented has to be collected and analyzed in a rational manner, otherwise it loses lots of its value. The market analysis that yields the target prices, the financial analysis that generates the target costs, and the disaggregation procedures that allocate costs among components and subassemblies all must be trusted. The target costing process must, therefore, be highly transparent. When the company has not a sound and rational target costing process, it can face difficulties in estimating product costs, prices, and volumes. This leads to an ineffective target costing system. As uncertainty increases, variables are estimated with less precision, and the technique becomes less powerful. The rationality of the process also contributes in a positive way to the commitment employees have to have to their assigned targets. A rational, transparent, and comprehensible process can more easily motivate employees and can more easily convince them to take up a challenging target.

‘Target costing mainly focuses on direct/variable costs’ is the fourth characteristic in this category. A company that uses target costing wants to know how design affects costs of a product. Therefore other factors that affect costs, including wages and fluctuations in indirect costs incurred by related divisions, have to be excluded from the target costing process. A valid reason exists for excluding fixed manufacturing costs from target costing. Fixed manufacturing costs represent significant funds
normally committed for long periods of time, and they cover a plant’s or division’s overall production capacity. These costs are not subject to value engineering procedures.

The fifth characteristic is ‘Influencing role of target costing’. Japanese companies use their accounting systems more to motivate employees to act in accordance with long-term manufacturing strategies than to provide senior management with precise data on costs, variances, and profits. Accounting plays more of an influencing role than an informing role. Motivating employees to make efforts to ultimately achieve the cost reduction objective that can be determined by subtracting the target cost from the current cost, is a challenging task of target costing. But the company has to be aware that it does not force unreasonable demands on their employees. All concerned should consider the target cost reduction objective achievable. It is the number to which the designers will be held accountable for the rest of the project. In order to maintain the discipline of target costing, the company must manage the size of the strategic cost reduction challenge carefully. The challenge should reflect the company’s true inability to match its competitors’ efficiency. To ensure that this requirement is met, the company must set the target cost reduction objective so that it is achievable only if the entire organization makes a significant effort to achieve it. The goal of the company here is straightforward. The strategic cost reduction challenge has to be managed carefully, ensuring that the target cost reduction objective is a ‘tiptoe’ objective.

The sixth and last characteristic in this category is ‘A design is released for manufacturing only when a product’s projected actual cost is equal to its target cost or The Cardinal Rule’. The cardinal rule of target costing – “The target cost can never be exceeded” – is critical to ensuring that the discipline of target costing is maintained throughout the design process. Of course in order for the cardinal rule to be effective it is necessary that targets, once they have been determined, can never be altered under any circumstance. This is simply part of the discipline of the target costing process. The cardinal rule can only be violated when the company has to launch a product for strategic reasons, such as maintaining a complete product line or getting the product to market on time. In this case, the application of the cardinal rule can also be seen as proactive decision making. A company prevents that a product that exceeds its targets will be produced.

Another focus of my research about the characteristics of target costing is the examination of the occurrence of these characteristics in the definitions of target costing. That research is primarily focused on definitions published in literature in the period 1990 till 2003. The top four of characteristics that most frequently occur in the definitions of target costing is: ‘Influencing role of target costing’, ‘Rationality of the process’, ‘Large scale cost reductions occur early in the product life cycle’ and ‘Reducing the cost of products over the entire supply chain’. 
General Conclusion

As a conclusion of the research about the most common characteristics of target costing in literature, I have tried to condense these nine characteristics into one definition which is the following: “Target costing is a cost management tool used by companies in a confrontational environment, primarily aimed at the early stages of product development, which tries to reduce, usually, but not exclusively the direct product’s costs over the entire supply chain. It is a rational process, that tries to leverage cross-functional insights and that results in specific cost targets at which a product has to be produced to guarantee the company’s future profits. During the entire process target cost information is being provided to support and motivate design engineers.”

The general management question in this thesis is: “What are the characteristics of target costing as a cost management tool?”. The following research question will be the subject of our case studies, “Do the characteristics, deducted from literature review, also occur in real business environments?”. Case study research excels at bringing us to an understanding of a complex issue like target costing and can extend experience or add strength to what is already known through previous research, for example previous research like a literature review. Critics of the case study method believe that the study of a small number of cases can offer no grounds for establishing reliability or generality of findings. Others feel that the intense exposure to study of the case biases the findings. Some dismiss case study research as useful only as an exploratory tool. How useful a case study may be, it cannot be more than an indication of certain explanations and solutions of a real-life situation. A case study research requires that researchers ensure that the study is well constructed to ensure construct validity, internal validity, external validity, and reliability.

Contacting my three F’s, Friends, Fools and Family permitted me to get track of some companies that use target costing. Companies, from which I expected that they could be using target costing, were contacted by phone. If the person to which I was talking to did not know the target costing concept, then I sent him an email with further information. That email contained some articles of target costing and also the literature review of this thesis. If afterwards appeared that the company uses the target costing concept their co-operation was asked. When they were willing to co-operate, an appointment was made. Eventually, I was able to make appointments with six different people from three companies. Those three companies were Bekaert NV, in which I investigated two business units Bekaert Steelcord and Bekaert Fencing NV, Daikin Europe NV and Recticel. Before the scheduled interview, a guideline with some questions was sent to the person. That guideline was not a strait-jacket for the interview. In general, during the interview, the usage of target costing was discussed. Afterwards, I tried to distil from that interview the relevant information that supports the characteristics of the target costing concept.
The case study research resulted in the following. The characteristic: ‘Cross-functional teams’ occurs in the four companies. Within Daikin, the importance of cross-functional teams was the highest. In Daikin all important decisions were made by consensus of all the team members. The other three companies also try to leverage some of the cross-functional knowledge, but the power of their teams is not so big as in Daikin. ‘Reducing the cost of products over the entire supply chain’ is another characteristic. The importance of reducing the cost of products over the entire supply chain is recognized by all four companies. However, the situation of Fencing and Steelcord differs from the situation of Daikin and Recticel. Daikin and Recticel are part of chained target costing systems. They are confronted with customers who impose target sales prices, and themselves, especially Daikin, do also impose target cost on their suppliers. Daikin and Recticel also ask and give very detailed information about their cost structure. Fencing and Steelcord are not really part of a chain of target costing systems. But they also try to leverage some knowledge of their suppliers, through a better collaboration. The characteristic of ‘Highly competitive environment’ is to me the least applicable to Fencing. Fencing mainly faces competition from smaller regional competitors. Yes, this competition can be very fierce, but the survival zone is still large enough to position themselves as quality producers who provide a complete product range. This tends more to a differentiation strategy. Of course, in the future survival zones can become smaller, so Fencing can be faced with fiercer competition and benefit a lot from the target costing concept. Steelcord operates in an environment where the sales price is given and Daikin and Recticel surely do not have power over sales prices. ‘Large scale cost reductions occur early in the product life cycle’ is a characteristic that surely surfaces in Daikin. Daikin uses design as major mean to influence the product’s cost. Fencing does not apply target costing for very long now, but there is a high potential for reducing cost by design alterations within Fencing’s product range. Steelcord uses the target costing concept in the design phase of the production process, and does not fully agree with the statement that 80 percent of the product’s cost are committed in the early stages of the product’s life cycle. When Recticel applied target costing, design alterations were a mean for reducing a product’s cost. So the potential to realize large scale cost reduction is also recognized by Recticel. ‘Frequent feedback’ is the fifth characteristic of target costing. The way how this characteristic is interpreted in this thesis is totally applicable to Daikin. Daikin’s design process can be divided into different stages, at the end of each stage a meeting is held were the achievement of the targets is discussed in detail. But also systematically acquiring feedback from the market is an aspect that Daikin has not forgotten. In the other companies feedback does also occur, but in comparison with Daikin it appeared to me that the intensity of that feedback, concerning target cost information, is not as high as in Daikin. Daikin was the only one who conducted a market study at a regular basis. Daikin’s clear and transparent design process, which encloses clear distinguishable stages, and the TSP model of Steelcord are clearly rational processes. Recticel and Fencing do not use any specific procedures. In the case of Recticel, target costing is not the basic philosophy. And Fencing has not much experience with the usage of
General Conclusion

target costing. So the characteristic of ‘Rationality of the process’ is lesser applicable in the latter two. ‘Target costing mainly focuses on direct/variable costs’ is a characteristic that does not exactly occur in the examined companies. In the four companies, also indirect or fixed costs are included. Also in Daikin indirect costs are attributed to target costs, but designers know that it is not their main responsibility to control that kind of costs. ‘Influencing role of target costing’ is another characteristic that surmounts in the four cases. Cost targets or cost reduction objectives can be part of a remuneration system that gives bonuses to employees when they achieve a certain objective. This was the case in Bekaert and Recticel. In Daikin targets were sometimes perceived as stress-causing factor. So the tightness of targets have certainly an influence on the motivation of employees. In Fencing, the continuance of the project depends on the examination of the future cash cost and future cash incomes, and not on the achievement of cost targets. When Daikin applies ‘The Cardinal Rule’, it will be in the early stages of the product life cycle. Recticel is forced to accept the cost targets that the car manufacturers impose and Steelcord uses its TSP model mainly to obtain a reference point. When it is clear that the reference point is not feasible Steelcord will not continue.
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Appendices:

Appendix 1: List of the appointments.

<table>
<thead>
<tr>
<th>Date</th>
<th>Person</th>
<th>Functie</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 april 2003</td>
<td>Frankie Descamps</td>
<td>Financial Controller</td>
<td>Bekaert Fencing NV, Zwevegem</td>
</tr>
<tr>
<td>8 april 2003</td>
<td>Bart Vandecappelle</td>
<td>Manager Finance &amp; IT</td>
<td>Bekaert NV, Steelcord, Zwevegem</td>
</tr>
<tr>
<td>11 april 2003</td>
<td>Laurent Vantournout</td>
<td>Project Leader</td>
<td>Daikin Europe NV, Oostende</td>
</tr>
<tr>
<td>17 april 2003</td>
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<td>Manager Finance &amp; IT</td>
<td>Bekaert NV, Steelcord, Zwevegem</td>
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<tr>
<td>18 april 2003</td>
<td>Marleen Rouges</td>
<td>Group Controller Exteriors Business Unit</td>
<td>Recticel, Wetteren</td>
</tr>
<tr>
<td>18 april 2003</td>
<td>Luc Sabbe</td>
<td>Manager Product &amp; Process Development</td>
<td>Bekaert NV, Steelcord, Zwevegem</td>
</tr>
</tbody>
</table>
Appendices

Appendix 2: Email sent to companies to ask for cooperation.

Geachte

Ik ben student aan de universiteit Gent, faculteit economie en bedrijfskunde. In het kader van mijn thesis, onder leiding van Dr. Patricia Everaert, ben ik op zoek naar bedrijven die hun medewerking aan mijn onderzoek willen verlenen. Concreet gaat mijn onderzoek over target costing. Target costing is een kostenbeheerstechniek waarbij kostenreductie in de ontwerp- en ontwikkelingsfase centraal staat. Mocht het concept van target costing geen onbekende zijn voor u, had ik graag daaromtrent wat informatie ontvangen. Een interview met één van de medewerkers betrokken bij het target costing proces zou een enorme meerwaarde betekenen voor mijn thesis.

Mocht target costing u vreemd in de oren klinken, ben ik altijd bereid u hieromtrent meer informatie te bezorgen. Het is mogelijk dat u het concept van target costing toepast maar een andere naam gebruikt.

Dank bij voorbaat voor uw medewerking.

Stijn Loosveld
stijnloosveld@pandora.be
Pijperzele 78
9620 Zottegem
België
0497/452276

Dear sir

I am a student at the university of Ghent, faculty of Economics and Business administration. In connection with my thesis, under the supervision of Dr. Patricia Everaert, I am looking for the cooperation of some companies. My thesis goes about target costing, target costing is a cost management concept that aims at reducing the costs of a product in the design and development phase. Does your company uses target costing? If so, I would very much like to receive more information with regards to the use of target costing in your company, preferably through an interview with yourself or one of your colleagues. It should be emphasized that all information obtained will be threatened as strictly confidential.

It is possible that your company applies the concept of target costing, but you are not aware that it is also called target costing in literature. Therefore, I am always prepared to give some more information about target costing.

Thanks in advance for your cooperation.

Yours faithfully

Stijn Loosveld
stijnloosveld@pandora.be
Pijperzele 78
9620 Zottegem
België
0497/452276

Characteristics of Target Costing as a Cost Management Tool
Appendix 3: Answer received from Masquito Aircraft NV.

Stijn,

Thank you for your interest in our small company.

I do know the term of Target Costing, but we are not in a position to implement it.... We are a very small company with an ambiguous goal and financing it is one of our largest problems. We only spend money where we really need to and providing we have the (financial) means. My son did a MBA course at Vlerick after he received his Applied Economics degree. He's also working with us now and we've discussed many business tools such as Target Costing before.

I hope that in the not too distant future, we'll be have a product that can be manufactured and sold, but that is not the case now.

Sorry we can't be of help just now.

Best regards,

John Pescod
Director

Masquito Aircraft nv
(administrative office only)
Reigersbaan 31
B-1760 Roosdaal - Strijtem
Belgium

Tel. +32 54 343 008
Time Zone: GMT+1
Email : post@masquito.be
Fax +32 54 343 009
URL : http://www.masquito.be
Appendices

Appendix 4: Guideline for the interview.

Leidraad voor het interview:

De leidraad voor het interview is gebaseerd op de kenmerken die afgeleid werden uit de literatuurstudie omtrent target costing. Bij ieder kenmerk werd getracht om een aantal relevante vragen te formuleren. Commentaar of opmerkingen bij één of meerdere kenmerken is altijd welkom.

1. De organisatorische context van target costing.
      i. In welke mate worden de verschillende afdelingen betrokken bij het target costing proces? Hoe gebeurt de samenstelling van het team?
      ii. Is de betrokkenheid van iedere afdeling dezelfde gedurende het ganse proces? Of kunnen er verschillende fasen in het proces worden onderscheiden?
      iii. Indien er onderhandelingen zijn tussen verschillende afdelingen, die in het team vertegenwoordigd zijn, wordt er dan altijd een consensus bereikt? Indien niet, wie heeft dan de doorslaggevende stem? (Is er een bepaalde hiërarchie/machtsverhouding in het team?)
      iv. Wat zijn zowel de voornaamste voor en nadelen van een multidisciplinair team?
      v. Is het team verantwoordelijk voor het bereiken van de targets, of is iedere afdeling individueel verantwoordelijk voor het bereiken van z’n targets?
      vi. Wat is de rol van het top management binnen het team?
   b. Kostenbeheersing/kostenreductie over de gehele supply chain.
      i. Wat is de rol van de leveranciers (of breder de rol van andere belanghebbenden zoals distributeurs, dealers…) gedurende het ganse proces?
      ii. Vindt u dat u macht heeft over de leverancier? Of omgekeerd zij over u?
      iii. Zijn leveranciers bereid om gedetailleerde informatie (omtrent kostenstructuren enz.,..) vrij te geven? Of staan ze hier afkering tegenover, heeft u ze moeten overtuigen om mee te werken?
      iv. Hoe gebeurt de uitwisseling van informatie? (gedeelde netwerken, vergaderingen, toegang tot databanken,…?)
      v. Hoe worden leveranciers beloond voor het bereiken van targets? (bijvoorbeeld een contract voor een bepaalde periode,..)
      vi. Spelen opgebouwde relaties uit het verleden met leveranciers een rol? Of wordt iedere aanbesteding gezien als een apart geval, en de beste krijgt altijd het order?

2. Kenmerken van de omgeving van target costing.
   a. Intense competitieve omgeving.
      i. Wordt de onderneming geconfronteerd met hevige (prijs) concurrentie?
      ii. Kunt u makkelijk prijzen wijzigen of moet door altijd iets tegenover staan? (betere producten, service,..)?
      iii. In welke mate wordt er rekening gehouden met ‘de stem van de klant’/klantenwensen? Is kennis van de klantenbehoeften cruciaal om te kunnen overleven?
      iv. Welke zijn zowel de voornaamste wegen waarlangs ‘de stem van de klant’ verwerkt wordt (georganiseerd marktonderzoek, via vertegenwoordigers,…)?
      v. Product wijzigingen zijn deze gebaseerd op veranderende, evoluerende klantenwensen, of zijn deze eerder gebaseerd op nieuwe technologische mogelijkheden ontwikkeld door ingenieurs / R&D?
vi. In welke mate en hoe wordt er rekening gehouden met de concurrenten?

3. **Kenmerken van het target costing proces.**
   a. *Grote kostreducties worden gerealiseerd tijdens de eerste de fasen van de product levenscyclus.*
      i. Is het productie proces in hoge mate geautomatiseerd, waardoor de kosten in hoge mate vastliggen? M.a.w is het reduceren van kosten tijdens de productie makkelijk?
      ii. Is het zo dat de levenscyclus van producten korter worden, waardoor het reduceren van kosten in de ontwerp en ontwikkelingsfase van een product steeds belangrijker wordt?
      iii. Wordt target costing ook toegepast op reeds ontwikkelde, ontworpen producten? Indien ja, verschilt dit van target costing toegepast op nieuwe producten.

b. **Frequente feedback**
   i. Hoe verlopen de informatiestromen gedurende het proces? (met welke frequentie, wat en hoe wordt er gerapporteerd,…)
   ii. Een feedback koppeling naar de klant is vaak ook belangrijk. Hoe gebeurt dit en op welke momenten gedurende het proces?
   iii. Is er een post-audit van de performantie van het target costing proces? Hoe wordt die performantie dan gemeten?

c. **Target costing is een rationeel proces.**
   i. Zou u misschien kort het proces van target costing kunnen schetsen? (misschien adhv een concreet voorbeeld uit het verleden)?
   ii. Hanteert u een duidelijk gestructureerd, systematisch target costing proces? (M.a.w is er een soort target costing handboek, een set van procedures die men moet naleven gedurende het ganse proces?) Of wordt ieder proces eerder ad hoc gestuurd?
   iii. Worden targets soms arbitrair bepaald?
   iv. Worden er specifieke ondersteunende technieken gebruikt in het target costing proces?

d. **Target costing is voornamelijk gericht op de directe/variabele kosten.**
   i. Worden er naast directe en variabele productiekosten ook overhead (en dergelijke) opgenomen in de targets? Indien ja, hoe worden deze dan toegewezen over de verschillende targets?

e. **Target costing heeft ook een beïnvloedende rol.**
   i. Wordt target costing ook gebruikt als gedragssturend systeem? Gaat men de targets soms zo bepalen zodat ze werknemers maximaal motiveren, om het gewenste gedrag uit te lokken? Of zijn target costs altijd gebaseerd op juiste accurate kosten?
   ii. Is er een soort van verloning gekoppeld aan het bereiken van targets? Is dit een individuele of groepsverloning?
   iii. Wordt er gedurende het proces soms gebruikt gemaakt van machtsverhoudingen tussen de verschillende afdelingen? (bijvoorbeeld bij het toe wijzen van targets aan de verschillende deelcomponenten van het product)
   iv. Vindt u dat werknemers zich echt gaan verbinden (commitment) aan het bereiken van targets, of creëren targets enkel bijkomende druk, stress?
   v. Worden targets op een moeilijk haalbaar niveau of een makkelijk haalbaar niveau gezet? Worden ze ook door ieder werknemer ook zo geperciepied?
Appendices

f. Producten worden enkel gelanceerd indien ze hun target cost gehaald kan worden (the cardinal rule).
   i. Worden targets makkelijk aangepast? Of is het zo dat eenmaal de targets (misschien onderscheid maken tussen targets voor componenten en targets voor het finale product) bepaald zijn deze niet meer gewijzigd kunnen worden?
   ii. Worden producten die hun target cost overschrijden toch gelanceerd? Wat zijn dan de voornaamste redenen?

Algemene vragen

4. Hoe zou u zelf target costing definiëren?

5. Zijn er volgens u nog andere onmisbare kenmerken van het target costing proces?

6. Waarom werd target costing geïmplementeerd in deze onderneming?

7. Wat zijn naar uw mening de voornaamste voordelen van target costing?

8. Wat zijn naar uw mening de voornaamste nadelen van target costing?
Appendix 5: Extract from the Simplified Standard Quotation of Renault.

**SHEET "ECO-0" - GENERAL INFORMATION**

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Plant</th>
<th>Economic entity to which the plant is linked</th>
<th>Validity period of the information</th>
<th>Perimetre of the information (Plant or specific activity?)</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Category</th>
<th>Formula</th>
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</thead>
<tbody>
<tr>
<td>Total sales turnover</td>
<td></td>
</tr>
<tr>
<td>Ratio of purchasing to turnover (%)</td>
<td></td>
</tr>
<tr>
<td>Annual cost of supplies for production to turnover (%)</td>
<td></td>
</tr>
<tr>
<td>Ratio of energy and fluids consumption to turnover (%)</td>
<td></td>
</tr>
<tr>
<td>Annual electricity consumption (kWh)</td>
<td></td>
</tr>
<tr>
<td>Annual gas consumption (kWh)</td>
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<tr>
<td>Price of electricity per kWh</td>
<td></td>
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<tr>
<td>Price of gas per kWh</td>
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<tr>
<td>R&amp;D budget to turnover (%)</td>
<td></td>
</tr>
<tr>
<td>Payment of royalties or licences</td>
<td></td>
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<tr>
<td>Ratio of equipment depreciation to turnover (%)</td>
<td></td>
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<tr>
<td>Annual investments to turnover (%)</td>
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<tr>
<td>Total value of equipment (excluding equipment paid by the customers)</td>
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<tr>
<td>Total value of equipment paid by the customers</td>
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</tr>
<tr>
<td>Ratio of interest expenses to turnover (%)</td>
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</tr>
<tr>
<td>Annual cost of machine maintenance (incl. sub-contracting in line 7a)</td>
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</tr>
<tr>
<td>Annual cost of tooling maintenance (incl. sub-contracting in line 7b)</td>
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<td>Sub-contracting of machine maintenance</td>
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<td>Sub-contracting of tooling maintenance</td>
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<tr>
<td>Sub-contracting of production activities</td>
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<td>Other sub-contracting expenses</td>
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<td>Annual cost of infrastructures</td>
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<tr>
<td>Overall floor area (m²)</td>
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<tr>
<td>Production floor area (m²)</td>
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Appendix 6: Extract from the Simplified Standard Quotation of Renault.

**SHEET "ECO-2A" - PLANT STAFF**

<table>
<thead>
<tr>
<th>DEPARTMENTS</th>
<th>Managers and Engineers</th>
<th>Techn./1st line managers</th>
<th>Prof. Labour</th>
<th>Direct Labour</th>
<th>Indirect Labour</th>
<th>Temp. Labour</th>
<th>Operating budget</th>
<th>Allocation (%) to the activity concerned</th>
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<td>PRODUCTION MANAGEMENT</td>
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<tr>
<td>MACHINE MAINTENANCE</td>
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<tr>
<td>PER PERSON PER YEAR</td>
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</tbody>
</table>
Appendix 7: Extract from the Complete Standard Quotation of Renault.

Sheet No. 1: PRODUCT COST BREAKDOWN

<table>
<thead>
<tr>
<th>SUPPLIER NAME</th>
<th>LOCATION OF MANUFACTURING SITE</th>
<th>Written by:</th>
</tr>
</thead>
</table>

| A1 - Currency of quotation: | A5 - Product description: | |
| A2 - Date of establishment of the quotation | A6 - Part reference and revision number adopted: | |
| A3 - Base date of quotation | A7 - Renault unit(s) or vehicle(s) affected: | |
| A4 - Reference volume: | (in parts per year) | |

<table>
<thead>
<tr>
<th>Amount</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A8 - Gross local purchases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>materials</td>
</tr>
<tr>
<td></td>
<td>components</td>
</tr>
<tr>
<td></td>
<td>outsourced processing</td>
</tr>
<tr>
<td>A9 - Logistics and taxes on local purchases</td>
<td></td>
</tr>
<tr>
<td>A10 - Gross imported purchases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>materials</td>
</tr>
<tr>
<td></td>
<td>components</td>
</tr>
<tr>
<td></td>
<td>outsourced processing</td>
</tr>
<tr>
<td>gistics, customs and taxes on imported purchases</td>
<td></td>
</tr>
<tr>
<td>A12 - Resale of materials for recycling</td>
<td></td>
</tr>
</tbody>
</table>

| A13 - Production Direct labour | |
| A14 - Operating and maintenance costs | |
|     | Supplies |
|     | Energy and fluid |
|     | Machinery maintenance |
|     | Tooling maintenance |
| A15 - Depreciation | |
| A16 - Scrap and reworked parts | |
|     | Scrap and reworks on purchases |
|     | Scrap on processing |
| A17 - Indirect factory costs | |
|     | workshop structure |
|     | factory structure |
| A18 - Infrastructure | |
| A19 - Income and Business taxes | |
Appendix 8: Extract from the Complete Standard Quotation of Renault.

Sheet No. 2a : COST BREAKDOWN OF PURCHASED RAW MATERIALS, COMPONENTS AND OUTSOURCED PROCESSING IN THE COUNTRY OF PRODUCTION

<table>
<thead>
<tr>
<th>Currency of quotation</th>
<th>example: euro</th>
</tr>
</thead>
</table>

### TABLE 1: COST BREAKDOWN OF PURCHASED RAW MATERIALS

<table>
<thead>
<tr>
<th>B1 - Designation of raw material + commercial ref.</th>
<th>B2 - Designation of the manufactured part</th>
<th>B3 - Coef. per product</th>
<th>B4 - Unit price in purchasing currency</th>
<th>B5 - Quantity used</th>
<th>B6 - Net quantity</th>
<th>B7 - Amount of gross purchases</th>
<th>B8 - Purchasing expenses</th>
<th>B9 - Scrap and reworks</th>
<th>B10 - Transport costs</th>
<th>B11 - Taxes</th>
<th>B12 - Selling price in quotation currency</th>
<th>B13 - No. of days' stock</th>
<th>B14 - RESALE OF MATERIALS FOR RECYCLING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Price</td>
<td>Units</td>
<td>quantity</td>
<td>unit</td>
<td>quan tity</td>
<td>unit</td>
<td>%</td>
<td>%</td>
<td>price</td>
<td>unit</td>
<td>unit</td>
</tr>
<tr>
<td>example: PA sheath socket</td>
<td></td>
<td></td>
<td>4</td>
<td>0.5</td>
<td>4 kg</td>
<td>3.5 kg</td>
<td>8</td>
<td>4.0%</td>
<td>1.0%</td>
<td>1 EUR</td>
<td>0.3 EUR</td>
<td>9.70</td>
<td>10</td>
</tr>
</tbody>
</table>

**TOTAL**

### TABLE 2: COST BREAKDOWN OF PURCHASED COMPONENTS

<table>
<thead>
<tr>
<th>B1 - designation of component + commercial ref.</th>
<th>B2 - Designation of the manufactured part</th>
<th>B3 - Coef. per product</th>
<th>B4 - Unit price in purchasing currency</th>
<th>B7 - Amount of gross purchases</th>
<th>B8 - Purchasing expenses</th>
<th>B9 - Scrap and reworked parts</th>
<th>B10 - Transport costs</th>
<th>B11 - Taxes</th>
<th>B12 - Selling price in quotation currency</th>
<th>B13 - No. of days' stock</th>
<th>B15 - No. of Tier Two supplier quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>example: mounting screw</td>
<td>bracket plate</td>
<td></td>
<td>6</td>
<td>0.25</td>
<td>EUR</td>
<td>1.5</td>
<td>3.0%</td>
<td>1.5%</td>
<td>0.25 EUR</td>
<td>0.1 EUR</td>
<td>1.917500</td>
</tr>
</tbody>
</table>

**TOTAL**