A survey of the adoption and use of target costing in Dutch firms

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Abstract

This paper reports the results of a survey among Dutch firms listed at the Amsterdam stock exchange on the adoption and use of costing practices that resemble the Japanese target costing concept. Nineteen out of thirty-two manufacturing firms claimed to use these practices, although they used different names for them. The study suggests that these practices were developed independently of the Japanese practice. Adoption is highest among assembling firms and is related to a competitive and unpredictable environment. Cost reduction is the main objective and benefit of these practices. The product development and design departments are leading in the target cost management process, which is mainly performed in team structures.

1. Introduction

The use of cost information and cost management during product design is a subject that receives increasing attention in the accounting literature (Anderson and Sedatole, 1998; Davila, 2000). The main motivation for managing costs during product design is that after the product development stage most costs have been “designed” into the product and during production cannot be influenced (significantly) anymore. Target costing is an important technique for managing product costs during the design stage (Kato, 1993; Ewert and Ernst, 1999). It is essentially concerned with setting a target cost to be achieved in the product development process, such that a sufficient profit margin is realized when the product is introduced into the market. As it focuses on long-term cost management efforts, target costing is considered to be a strategic management accounting system (Chenhall and Langfield-Smith, 1998; Ewert and Ernst, 1999; Guilding et al., 2000; Tani, 1995). Target costing can be part of a broader product cost management process, called target cost management (TCM), which is concerned with the achievement of a target cost simultaneously with
planning, development and detailed design of new products (Tani et al., 1994). Ewert and Ernst (1999) characterize the essence of target costing by three elements: (1) a market orientation, as the selling price is the starting point for determining the target cost; (2) a coordination function, as the target cost coordinates the activities of product designers; and (3) strategic learning, as it, in interaction with other factors, influences the long-term cost structure.

Target costing is often associated with Japanese firms and empirical research has mainly been performed by Japanese researchers for the Japanese situation (e.g. Kato, 1993; Cooper and Yoshikawa, 1994; Tani et al., 1994). Cooper and Slagmulder (1999), who describe the "generic approach" to Japanese target costing, argue that Western firms are introducing target costing to discipline their product development processes. Alternatively, it can also be imagined that Western firms facing similar markets and environments as Japanese firms have already introduced techniques with elements similar to target costing.

Some studies have investigated whether target costing practices are also relevant for, and do occur in non-Japanese situations, such as in Australia (Chenhall and Langfield-Smith, 1998; Wijewardena and De Zoysa, 1999), New Zealand, the UK and USA (Guilding et al., 2000), India (Joshi, 2001), and Germany (Horvath and Tani, 1997). Most of these studies, however, only provide insight into the adoption and perceived benefits of a broad set of management accounting practices, but do not study the factors influencing the adoption of target costing systems. One could expect that as the drivers for using target costing are not idiosyncratic to Japan, they could also be used in a non-Japanese situation, even though the actual application of such practices may deviate from the way Japanese firms use them.

This study investigates the use of practices that resemble target costing by Dutch firms listed at the Amsterdam Stock Exchange. We were interested in the following questions. Do Dutch listed firms use costing techniques similar to the principles of target costing? Do they identify their systems as being “target costing”? Under which circumstances are such costing practices more likely to be used? What are the goals that firms try to achieve with these costing practices and to what extent are expected benefits achieved? Finally, how is the application of the practice organized? In particular, which departments are involved and which organizational form is used?

To explore these questions a survey was developed that built to a great extent on the survey by Tani et al. (1994), who investigated the adoption and use of target costing by Japanese listed manufacturing firms. Before presenting the empirical results, Section 2 provides an overview of target costing literature related to the previous research questions. Section 3 discusses the design of the study, and Section 4 discusses the analyses and results. Section 5 draws conclusions and provides some avenues for further research.

2. Target costing and target cost management

2.1. Definition

In the accounting literature, target costing has been introduced as a strategic management accounting system for the management of product costs (Ewert and Ernst, 1999). It is a costing technique to manage a firm’s future profits by explicitly including target costs in the product development process (Cooper and Slagmulder, 1999). This management of target costs is generally referred to as TCM and in Japanese firms is concerned with achieving a target cost simultaneously with planning, development and design of new products. In relation to this TCM system specific tools were developed such as cost tables, value engineering, total quality management and inter-organizational cost management (Cooper, 1995; Kato, 1993; Tani et al., 1994).

Central to the target costing concept is “reverse costing”, in which an estimation of the attainable selling price and the required profit margin are used to determine the allowable cost for a new product. In the accounting literature this reverse costing mechanism is referred to as “market-driven costing” (Cooper and Slagmulder, 1997). This market orientation is an essential characteristic of target costing systems (Ewert and Ernst,
1999). Cooper and Slagmulder (1997, 1999) describe that in the target costing systems of Japanese firms market-driven costing is followed by two other costing sections. In the “product-level target costing” section cost pressures are transmitted to the product designers to discipline and focus their creativity to the cost side of the product. Once target costs for designers are set, “component-level target costing” is used to discipline and focus suppliers’ creativity to find ways to design and manufacture components that meet the target costs and required quality and functionality, while realizing an adequate profit margin.

For this study, it was chosen to adopt a broad definition of target costing, based on its general characteristics. Target costing is defined as a costing technique that uses the following formula to calculate an allowable cost price to be achieved during the product development process:

\[
\text{maximum allowable cost price} = \frac{\text{attainable selling price}}{\text{required profit margin}}.
\]

As Dutch companies may have developed and use techniques similar to Japanese TCM, without knowing its theoretical counterpart, they may have chosen different ways of organizing the cost management process. Therefore, the study focuses mainly on the generic phase, i.e. market-driven costing.

2.2. Adoption of target costing

The study of Tani et al. (1994) found that in 1991 60.6% of their sample of 180 listed Japanese manufacturing firms used some form of target costing. Wijewardena and De Zoysa (1999) found in their sample of 209 Japanese manufacturing companies that of the 11 studied management accounting practices, target costing was perceived as the most important practice used. Even though relatively little is known about the occurrence and actual use of these practices in non-Japanese contexts, one can expect that the general idea of target costing may be well applicable in other contexts. Wijewardena and De Zoysa (1999) found that for the 225 Australian manufacturing companies they surveyed, target costing ranked only tenth in importance of the 11 management accounting practices studied. Chenhall and Langfield-Smith (1998) found that of 78 large Australian manufacturing firms, 38% claim to use target costing, although this adoption rate was relatively low compared to the adoption of other accounting practices. Guilding et al. (2000) show that for New Zealand, The United Kingdom, and the United States the adoption rate of target costing is relatively moderate. A problem with the latter study is that also non-manufacturing firms were surveyed for which target costing can be irrelevant. This may have led to a lower adoption rate than the other, more generally applicable techniques surveyed (such as budgeting). All these studies specifically inquired about the adoption of a technique called target costing, not whether costing practices with similar characteristics as target costing were used.

Some studies develop contingency arguments to identify circumstances under which the use of target costing is more appropriate or desirable for firms. First, it is argued that target costing is only relevant for manufacturing industries, as these are characterized by product development processes. In particular, assembling industries are argued to benefit from target costing (Horvath and Tani, 1997). Tani et al. (1994) found that in assembling industries target costing was heavily adopted. However, target costing was also used in process industries, such as the chemical industry.

Tani (1995) suggests that Japanese firms have adopted TCM as a response to increasing environmental uncertainty. TCM supports a firm’s information processing requirements, when attempting to manage the increasing variability and specificity of factors to be considered in decision-making. Target costing is argued to be particularly beneficial under intense competitive pressure, to ensure that only profitable products are introduced into the market (Cooper, 1995, 1996; Cooper and Slagmulder, 1997). One important determinant of a firm’s competitive position is its cost level (Kato, 1993), which, when important for a product’s success, needs to be managed more aggressively. The setting of a target selling price is dependent on the availability of competitive products and their perceived value (Cooper and
Highly sophisticated customers are able to see differences in competitors’ offerings and are able to attach value to differences in functionality and quality (Cooper and Slagmulder, 1997). When customers are sensitive to differences in selling prices, firms have less space to maneuver with the selling price, and must focus on costs to realize an adequate profit margin. Thus, firms with a strong cost focus in their product development efforts will be more inclined to adopt target costing.

2.3. Goals of target costing

In the literature, target costing is positioned as a cost management system, suggesting that cost reduction is an important objective. However, the product development process is characterized by multiple, and possibly conflicting goals, such as realizing low cost, high quality, customer satisfaction, and timely product introduction (Cooper, 1995, 1996; McMann and Nanni, 1995; Tani et al., 1994). Target costing as a disciplining mechanism contributes to realizing these different goals by having product designers make explicit tradeoffs between them. Its market orientation forces designers to consider explicitly the value of product characteristics in the ‘eyes of the market’, and the price that customers are willing to pay for it (McMann and Nanni, 1995). Cooper (1995) suggests that the main purposes of target costing are to secure that no unprofitable products are introduced and to realize an optimal tradeoff between cost, functionality, and quality. After setting the target costs several coordination techniques can be used to manage these tradeoffs between goals in the design of products, such as value engineering (VE), quality function deployment (QFD) and design for manufacture and assembly (DFMA) (Cooper and Slagmulder, 1999).

This tradeoff between multiple objectives to be managed during product design leads to the question for which goals firms perceive target costing to be beneficial to adopt such a practice. And, after adoption, to what extent are these goals actually realized? Tani et al. (1994) found in their Japanese sample of manufacturing firms that cost reduction was the most important goal when TCM was implemented, then followed by realizing quality, satisfying customer needs and timely introducing new products. When respondents reflected on the present goals of the system these rankings remained the same, although the average importance of all goals had increased. Horvath and Tani (1997) similarly found in a multiple case study among 10 German adopters of target costing practices that they perceived cost reduction as most important. This goal was followed by market-oriented product development, lead-time reduction for product development (time-to-market), and high quality.

2.4. Organization of target costing

Another important aspect of Japanese target costing practices is the horizontal integration of functions, usually consisting of cross-functional teams that work together on achieving the target cost (Cooper and Slagmulder, 1997; Cooper and Yoshikawa, 1994; McMann and Nanni, 1995; Tani, 1995). In addition, it can encompass a cooperation with representatives from buyer and/ or supplier firms, referred to as inter-organizational cost management. As a holistic approach to cost management, the cross-functional team brings different types of knowledge and capabilities to the target cost achievement. Typically, the engineering function has the most influential role in these multi-disciplinary teams (McMann and Nanni, 1995).

Tani et al. (1994) found that in the TCM teams of Japanese manufacturing firms the engineering functions (Design and Production Technology) and Purchasing were most often members of the team, then followed by Development, Marketing, Manufacturing and Product Planning. Accounting was the least involved function. This is in contrast to the German firms studied by Horvath and Tani (1997) study, where the controlling function had an important role.

3. Survey study

A survey was developed that focused on the adoption of cost management techniques similar
to target costing. The study was designed to identify the occurrence and use of such practices in Dutch firms. It is possible that firms use techniques similar to target costing, without being familiar with the concept. In a similar vein, Alnestig and Segerstedt (1996) found that Swedish firms used costing techniques with principles similar to activity-based costing without realizing this. Therefore, in order to assess whether companies use such a system, a broad description of the general idea of target costing was provided following the definition in the previous section. This definition focused on reverse costing, which is the crucial feature of a target costing system. Respondents with functions related to product design were asked to examine whether they used systems matching this description. The benefit of using this rather broad definition is clear, it enables to identify firms that have developed and use costing practices similar to target costing, which would not be identified by focusing on “target costing” per se, or by setting narrow boundaries on the system’s characteristics. On the other hand using such a definition has limitations as well, as less detail is captured about the exact content and use of the costing practice and the extent to which it deviates from the description of target costing systems in the literature.

The survey first focused on the adoption of these costing practices in general, per industry, and related to the contingency factors as identified in the literature. In addition, the survey asked non-adopters why they did not adopt target costing. The next section assessed the adopters’ objectives when they adopted target costing and their perception of the benefits that they currently realized with it. Finally, the organization of their practices was identified by questions about the role of departments and the organizational form used.

For all variables mentioned in the previous section, single item indicators were used for measurement, except for competition, for which two indicators were used. First, following Björnenak (1997), we use an indication of the number of competitors as a proxy for the competitive environment. The larger the number of competitors, the more fierce competition is expected to be. A second measure assesses the perceived intensity of competition. Two other questions measured the (perceived) environmental uncertainty of the firm and the importance of a cost focus for the firm. For variables for which multiple indicators exist, such as environmental uncertainty, these would probably lead to better measurements. However, single indicators were preferred to limit the length of the questionnaire, in order to raise the response rate. This was felt necessary to obtain an adequate sample size for performing statistical analyses. Where possible, 7-point Likert scales were used for measurement, where 1 represents “not at all” and 7 represents “very much”. In addition, much use was made of open questions, which provided the respondent the opportunity to further react to issues that in his or her perception were important.

As some questions are based on the Tani et al. (1994) study, the results can to some extent be compared with their results for Japanese manufacturing companies. However, such a comparison should be made with care, as the Japanese study focuses on TCM, which is broader than only target costing, and because differences exist, such as in language, questions, setting, and sample characteristics.

The survey was pre-tested among three senior controllers of large manufacturing companies and, after a minor adaptation, was sent out in December 1996 to all listed manufacturing companies at the Amsterdam Stock Exchange. In the case when a (holding) company had one or more subsidiary companies, these were surveyed as well, as it is likely that knowledge about target costing practices is better known at the firm level. No multiple responses from the same company were received. In addition to manufacturing companies, the questionnaire was sent to all listed non-manufacturing organizations, except for financial, insurance and trading companies, in order to explore the assumption that target costing is not applicable to them. In total 175 questionnaires were sent out.

Because at the design of the study little knowledge was present about existing target costing practices in the Netherlands, ex ante it was difficult to identify the most informative person to send the questionnaire to. Therefore, we built on the
Tani et al. (1994) study that used both engineering and accounting functions as respondents. We preferred to send the questionnaire to the manager in charge of product design as a key informant, using persons occupying other functions as key informants only when this function would not be identified. All companies were approached by telephone, to identify the head of the product development department. If such a function was unknown, then the name of the head of the R&D department was asked for. If this function was unknown, the head of the financial department or accounting department was identified. The questionnaire was then addressed to the person first identified by this exercise. If, however, a company did not wish to identify persons occupying these functions, questionnaires were addressed to both the head of the product development department and the head of the financial department (without specific names), with an accompanying letter asking to forward it to the best-informed person. In January 1997, all non-responding firms were sent a reminder including a second questionnaire.

A total of 43 responses were received, corresponding to an overall response rate of 24.6%. The final sample of manufacturing companies consisted of 32 responses, which corresponds to a response rate of 21.8%. A chi-square test of the adoption frequency of target costing between early and late respondents shows no significant differences. Mann–Whitney analyses showed no systematic differences between early and late respondents on the other variables studied.1 In addition, similar analyses were made to test for differences between the type of respondent (engineering or accounting). Twenty-six respondents informed about their function, of which fourteen were heads of product development and eight were management accountants or controllers (four others had different functions). The results of these analyses show little evidence of systematic differences as well.2

Eleven responses were received from the 28 non-manufacturing firms (consisting of construction and service firms, such as in IT, engineering, and transport), corresponding to a response rate of 39.3%. Consistent with the expectation that target costing is a typical manufacturing phenomenon, none of these firms used such practices. The main reason for non-adoption was that target costing was not applicable to them, due to the nature of the company. However, we do not rule out the possibility that these firms may have had difficulty relating the target costing definition in the survey to their situation, and that different but related methods might be used in these industries in product and service development. All subsequent analyses in this study are based on the manufacturing sample only, as (1) for these firms target costing is deemed relevant, (2) they did use target costing and (3) earlier studies focused on these firms only as well, which makes comparisons more feasible.

Because of the limited sample size and inadequate distributional properties for most of the variables for using parametric statistical analyses, non-parametric statistical analyses are used to analyze the data. It is important to recognize that the relatively small sample size reduces the statistical power of the tests used (i.e., the ability of the test to find significant effects, when they indeed exist), particularly for sub-sample analyses. Therefore, in order to increase statistical power of this study, and to obtain a more reasonable balance between the risks of having Type I and Type II errors, we follow Lindsay’s recommendation to increase the significance level, and interpret the statistical results at the 10% level of significance (Lindsay, 1993).3

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1Only one variable, “customer satisfaction benefits”, differed significantly between early and late respondents at the 10% level of significance. Taking into account the large number of variables analyzed, this may have been a result of chance, which may be more plausible as no other significant differences were found.

2One variable, “intensity of competition”, was perceived significantly higher by heads of product development compared to management accountants, which difference was significant at the 5% level of significance. Similar to 1, this could have been the result of chance.

3The problem of finding effects which in reality do not exist (thereby incorrectly rejecting the null hypothesis of no effect, that is, a Type I error) can be of even serious nature as not finding an effect when it in fact does exist (thereby falsely not
4. Analyses and results

4.1. Adoption of target costing practices

In the questionnaire the respondent was provided a definition of target costing, with which he or she was asked to compare the system. Target costing was defined as consisting of a costing method calculating the maximum allowable cost price by subtracting a required profit margin from the expected selling price. Nineteen respondents claimed to use a technique similar to the definition, which equals a 59.4% adoption rate for the manufacturing sample. This can be considered a fairly high adoption rate. Table 1 shows the distribution of adoption across industries.

Similar to the study of Tani et al. (1994), especially the electronics, textile and precision equipment industries make relatively high use of these techniques. This confirms to expectations, as assembling industries are considered the most feasible industries for the use of target costing. Surprisingly, also the chemical industry shows a fairly high adoption rate. Tani et al. (1994) provide a plausible explanation for this. They suggest that in process industries TCM is used by diversified firms for assembled products and by some firms for the product package and/or for material blending and selection of energy and catalysts in the product development stage.

An open question was asked to examine how adopters name their system, in order to explore the diversity of names used for the systems and the likelihood that companies have developed the system independent of knowledge of Japanese practices. Only one respondent answered that the system used is actually called target costing. A wide range of other names and descriptions for their system (or the practice in which the system is embedded, without explicitly naming the system), was provided by the respondents. These include “basic net price”, “manufacturing cost reduction”, “pre-calculation”, “cost price monitoring”, “contribution margin maximization”, “benchmarking of cost structures of competitors”, “direct costs/feasibility study” and “cost reduction”. This diversity of names and descriptions used implies that many firms have developed a system or techniques, based on similar principles as target costing, without being familiar with the concept. Empirical research into this type of systems thus may better focus on its characteristics, instead of its name.

Two firms claimed that although their system is to a certain extent similar to the definition of target costing provided, it also shows differences. One textile firm described to use product “development on basis of minimum required value added”. The respondent argued that target costing “tends to result in lower quality, as it [the product] has to become cheaper”. Therefore, as the company fears that a cost focus will harm a quality focus, the

<table>
<thead>
<tr>
<th>Industry</th>
<th>Target costing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No use</td>
</tr>
<tr>
<td>Food</td>
<td>3</td>
</tr>
<tr>
<td>Textile</td>
<td>0</td>
</tr>
<tr>
<td>Publishing/paper</td>
<td>2</td>
</tr>
<tr>
<td>Chemicals/ pharmaceuticals</td>
<td>4</td>
</tr>
<tr>
<td>Rubber</td>
<td>0</td>
</tr>
<tr>
<td>Steel</td>
<td>0</td>
</tr>
<tr>
<td>Fabricated metals</td>
<td>3</td>
</tr>
<tr>
<td>Electrical/electronics</td>
<td>0</td>
</tr>
<tr>
<td>Transportation equipment</td>
<td>1</td>
</tr>
<tr>
<td>Precision equipment</td>
<td>0</td>
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<tr>
<td>(instruments/optical)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
</tr>
</tbody>
</table>

Note: The industry classification is based on Tani et al. (1994).

(footnote continued)
rejecting the null hypothesis, that is, a Type II error). Therefore, sacrificing some statistical significance for power can improve the informativeness of the study, which can be of particular benefit for exploratory studies. For example, expected relationships may not be found due to a lack of power, and as a result receive less attention in future research, while in fact they do deserve to.

4 We should note, however, that non-response bias could result in an overstatement of the real adoption rate. There could be relatively more non-adopters among the non-respondents, for example because “it is not relevant to them” (Guilding et al., 2000).
system is not [only] aimed at cost reduction, but at value added creation. In their opinion an important side-effect of their value added approach is that it produces insights into policy issues which can lead to improvements in competitiveness. The respondent argued that “[building on] value added gives more insight into strategic issues which lead to an improvement of competitive position”. In other words, they feel that using the concept of value added provides better insight into tradeoffs between the different goals of product development. A chemical bulk producer noted that its system differed from target costing in the calculation of the selling price, which they base on benchmarking of prices and cost structures with competitors. Their description of the system, however, is similar to the definition of target costing provided in the survey. One food company further reports to “only use the system under special circumstances, that is to test for the feasibility of special products. It is not used for the normal product range”. All other adopters did not indicate that there were fundamental differences between their approach of target cost calculation and the definition provided to them, or in the way of use.

Non-adopters were asked the reason(s) for not adopting target costing, which results are provided in Table 2.

The main reason for not adopting these practices is that they are not considered useful, due to the nature of the company. Two (mass) food companies, for instance, suggested that in their situation the costs of individual products do not vary much, and are not the most important. For them important cost components relate to brand support, in particular sales and marketing costs. An additional analysis shows that this reason is not related to specific industries.

<table>
<thead>
<tr>
<th>Reasons for not adopting target costing</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to the nature of the company not well applicable</td>
<td>8</td>
</tr>
<tr>
<td>Unfamiliar with the method</td>
<td>2</td>
</tr>
<tr>
<td>Information gathering takes too much time</td>
<td>1</td>
</tr>
<tr>
<td>Analysis and reporting takes too much time</td>
<td>1</td>
</tr>
<tr>
<td>Method costs too much</td>
<td>1</td>
</tr>
<tr>
<td>Other reasons (open question)</td>
<td>2</td>
</tr>
</tbody>
</table>

Mann–Whitney analyses were conducted to compare adopters with non-adopters on the contingency factors (competitive environment, environmental uncertainty and the importance of cost focus in product positioning). These factors were all measured on a 7-point Likert scale, where 1 represented “very little/few” and 7 represented “very much/high”. As shown in Table 3 a more unpredictable environment ($p = 0.063$) and more intense competition ($p = 0.09$) are significantly related to the use of these practices. Neither the number of competitors nor a cost focus was significantly related to adoption.

These results indicate that an unpredictable environment and a perceived intensive competition can induce firms to adopt and develop practices resembling target costing, to better cope with these pressures. Surprisingly, the importance of a cost focus is not significantly related to the adoption decision. This, however, may also result from the statistical power of the study. The questionnaire in addition measured the importance of profit margin and selling price when positioning the product in the market. These components of the target cost formula can be a driver for a cost focus (i.e., to realize a certain profit margin or to set a certain selling price, costs need to be managed more or less aggressively). Both importance of profit margin ($p = 0.459$), and importance of selling price ($p = 0.823$), however, were not significantly related to the adoption of the costing practice. Finally, an explanation for the insignificance of the number of competitors is that this measure may be less informative about the intensity of the competitive environment, which is theoretically most important.

4.2. Goals and benefits of target costing practices

As discussed before, in the product development process several goals need to be pursued simultaneously, for which purpose target costing systems can be supportive. Goals to be realized are high
product quality, customer satisfaction by developing products that fulfil their needs, fast product introduction and low cost. We first measured the degree of importance that adopters assigned to these different goals for their adoption decision.\(^6\) Second, we measured the extent to which their system at that time realized benefits on these goals. Both goals and benefits were measured on a 7-point Likert scale, where 1 represented “unimportant” and 7 “very important”. Table 4 presents the results.

Based on the literature we expected cost reduction to be the most important goal when they adopted the system.\(^7\) The wish to introduce products timely, satisfy customer needs and control quality ranked after cost reduction. A Friedman test, which was used as a protection test, shows that for the total set of goals significant differences exist between the importance of the specific goals ($p = 0.017$). Wilcoxon Signed Ranks Tests, used to identify specific significant differences, show that the importance of cost reduction differs significantly from timely product introduction ($p = 0.055$), customer satisfaction ($p = 0.051$), and quality control ($p = 0.005$). The other differences between goals are not statistically significant at the 10% level of significance.

Table 4 further shows that the ranking of current benefits firms assign to their system equals the ranking of the initial goals. A Friedman test performed for the total set of benefits reveals that significant differences exist between specific benefits realized ($p = 0.001$). Wilcoxon Signed Ranks Tests show that the current benefits with respect to cost reduction differ significantly from timely product introduction ($p = 0.006$), quality control ($p = 0.002$), and customer satisfaction ($p = 0.015$). In addition, timely product introduction differs significantly from quality control ($p = 0.049$). Other differences between current benefits are

\(^{6}\) We recognize that asking respondents about their motives of the past can be problematic, because of problems of recalling, and because respondents could attribute the current goals or benefits of the system to the initial situation. Therefore, it should be recognized that this question might not fully capture the reasons for adoption at that moment in time, and that results can to some extent be biased to the current situation.

\(^{7}\) As the definition used for measuring the use of target costing explicitly points to costing issues and not directly to the other goals respondents may have been directed more towards cost reduction. Thus, it should be noted that these findings relate explicitly to the practices identified by the respondents based on the definition provided, not to target costing systems per se. We thank an anonymous reviewer for pointing at this issue.
not statistically significant at the 10% level of significance.

Next, it was assessed whether differences exist between the firms’ current benefits of target costing and the goals the system was initially adopted for. A Wilcoxon Signed Ranks Test suggests that the benefits of cost reduction are significantly higher rated than the initial goal of cost reduction ($p = 0.054$). The other differences between specific goals and benefits were not statistically significant at the 10% level of significance.

Similar to the findings of Tani et al. (1994), these analyses suggest that cost reduction was the most important goal when the firms introduced the system. However, the rest of their ranking of goals differs from this study, as in their study quality ranks second, customer satisfaction third, and timely product introduction fourth. Similar to the higher perceived benefits of the system in this study, they found that the importance of all goals had strongly increased when they focused on the present objectives of the system. The results are also fairly similar to those of Horvath and Tani (1997), who found in 10 German companies, that cost reduction ranked first, market-oriented product development second, lead-time reduction third and quality fourth in importance when introducing the system. However, in their study the importance of market-oriented product development increased strongly after the implementation of the system, which then almost equaled the importance of cost reduction.

### 4.3. Organization of target costing practices

The questions about the organization of target costing in the survey were related to the TCM process, by measuring the involvement of functional departments in the application of target costing, and the organizational form used for the target costing practices. The involvement of functional departments in the application of target costing was measured using a 7-point Likert scale. Table 5 shows the medians and rankings of the involvement of functional departments in the target costing practices. In addition, a comparison is made with the ranking of the Tani et al. (1994) study, which measured the frequency that the department is a member of the TCM team in their sample. TCM team membership is also a measure of involvement, although it is only informative about the presence of the department in the team, and not about the degree of involvement or importance.8

A Friedman test shows significant differences between the involvement of the several functional departments in the application of the target costing practice ($p = 0.000$). Wilcoxon Signed Ranks Tests reveal that the involvement of the Product Development department differs significantly from the Product Design department ($p = 0.084$) and from all other departments ($p < 0.01$). The Product Design department is also significantly more involved than all other lower ranked departments ($p < 0.01$). The involvement of the other departments is not significantly different from the next ranked department.

Similar to the Japanese situation, it is found that although the application of the costing systems in the sample is mainly aimed at cost reduction, it is predominantly the engineering function that is involved, and not the financial or accounting function. The most notable difference with the Tani et al. (1994) study is the high involvement of the Product Development department, which

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8This study did not assess the importance of the Product Technology department, which ranked second in the sample of Tani et al. (1994). The pretest of the questionnaire of this study suggested that the respondents did not have such a department, were unfamiliar with it and got confused when it was included. Therefore, it was decided to eliminate the Product Technology department from the list of departments.
ranks even higher than the Product Design department. In contrast, Horvath and Tani (1997) found that in the 10 German firms the management accountants or controllers had an important role. Subsequently, it was assessed what organizational form the firms use for their target costing practices. Table 6 shows that the majority of target costing adopters use multidisciplinary team structures. Three firms answered that the application of target costing was conducted by the controller’s staff, although two of them also reported the use of interdisciplinary teams. We suspect the management accounting function to be a part of these teams. A few firms further reported the use of rules and regulations for the application of target costing (2), a separate target costing department with a team structure (1), the use of the accounting department for target costing (1), and the use of other organizational provisions, by the respondents described as “within the product (market) group”, and “in the goals of the development project”.

5. Conclusion and directions for future research

This exploratory survey study suggests that, shortly after the publication of the Japanese target costing practices, Dutch listed manufacturing companies made relatively much use of costing techniques similar to the concept of target costing. These systems existed by a diversity of names and were used across industries, in particular in assembling firms. The findings suggest that these costing techniques were relatively more often adopted under circumstances of intense competition and high environmental uncertainty. Further, the firms’ main objective for adoption was cost reduction, which was also the main benefit they received from the system in the product development process. The departments Product Development and Product Design were most heavily involved in the application of target costing, while the Accounting department seemed to be least involved. The firm’s target costing efforts were mainly organized in team structures, in which knowledge and capabilities of different organizational functions are combined to achieve the target cost. These elements of the Dutch costing practices coincide with Japanese TCM practices as described in the literature and with contingency factors argued to drive the adoption of such systems.

An attempt was made to compare the Dutch practices with Japanese practices identified from the survey of Tani et al. (1994), which led to several similarities and differences. Due to the nature of survey research, we cannot say much about why these differences and similarities between the studies exist, for now we can only observe them. In addition, caution is warranted in making such a comparison, because, as argued by McMann and Nanni (1995, p. 333), “any comparison between Western and Japanese practices should, at a minimum, include some acknowledgement of the different assumptions, challenges and management philosophies under which the techniques are being employed”. Wijewardena and De Zoysa (1999), for instance, provide an overview of some specific characteristics of Japanese companies under which the management accounting systems operate, consisting of collective decision-making, unique company philosophies, subcontracting strategies, and the firm-specific education and training of management accountants. It will be clear that in this study it is difficult to touch upon these issues.

From this research we can conclude that Dutch listed manufacturing firms use costing techniques that are similar to the concept of target costing: their costing methods identify a target cost by subtracting a required profit margin from an expected selling price. However, this study provides less insight into the precise nature and details

<table>
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<tr>
<th>Table 6</th>
<th>Organization of target costing</th>
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<tbody>
<tr>
<td>Team</td>
<td>14</td>
</tr>
<tr>
<td>Controller’s staff</td>
<td>3</td>
</tr>
<tr>
<td>Rules and procedures</td>
<td>2</td>
</tr>
<tr>
<td>Target costing department</td>
<td>1</td>
</tr>
<tr>
<td>Accounting department</td>
<td>1</td>
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<tr>
<td>Other</td>
<td>2</td>
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of these costing systems and the organizational processes and actions that precede or are initiated by these target costs (i.e., TCM). An important direction for future research is therefore to study the actual processes and methods of cost management by firms using such costing practices. In-depth qualitative research may be the preferred research methodology to find out how these systems are actually designed and used, and would permit more detailed comparisons with the descriptions of Japanese use of target costing.

Another direction for future research is to conduct empirical research on target costing for manufacturing firms in other Western countries, in order to compare adoption rates, and the characteristics of these systems. Future studies focusing on the adoption and diffusion of target costing could attempt to identify a broader set of reasons for adopting these systems, and could go beyond investigating only market-driven target costing. Cooper and Slagmulder (1997), for instance, offer a broad set of contingency factors, such as product characteristics and strategy, for which they argue product-level target costing is useful. However, these factors need not only to exist of “efficient choice” reasons, as used in this paper, but, analogous to some studies on the adoption and diffusion of activity-based costing, also can exist of other motives, such as fad and fashion perspectives (Bjørnenak, 1997; Malmi, 1999). Finally, the role and importance of the target costing system in relation to the use of other management accounting systems will be worthwhile studying, as the recent surveys by Chenhall and Langfield-Smith (1998) and by Guilding et al. (2000) have shown only modest appreciation for target costing systems (under that name) by Western firms.

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References


