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Target costing in Turkish manufacturing enterprises

Abstract

Rapid developments in technology, change in customer expectations, shortening product life cycles and especially increasing global competition force the companies to reach the targets of "low cost, short time and high quality" at the same time and the highest level possible. Therefore, companies utilize the modern management accounting techniques in achieving these goals. One of the most important among these methods is "Target Costing".

The empirical study conducted in this paper about target costing is a descriptive research covering the years 2007 and 2008. The companies within this study are selected from the top 500 manufacturing companies listed in ICI (The Istanbul Chamber of Industry) 2006 index. The aim of the study is to reveal the basic differences between those companies which apply target costing, in terms of application level and to analyze applicability of the technique.

Keywords: target costing, Turkish manufacturing enterprises, cost management, management accounting, accounting.
JEL Classification: M41.

Introduction

It has become compulsory for today's companies to reach product-related cost, time, quality and functionality targets at the same time and at the maximum level possible; in order for them to develop sustainable competitive advantage through producing quality and functional products as demanded by the customers over a price determined by the market, and to maintain their existence in the ever-changing environment. This compulsion, on one hand, requires planning and control of the cost prices of the products and services to continuously decrease them, and on the other hand, aggravates profit and cost planning. This situation has revealed the concept of market-oriented product development and strategic cost management, and in order to achieve this, various methods and techniques have been developed and put into practice. One of the methods developed under the leadership of Japanese companies, as a result of these perceptions, is "Target Costing" method.

Being an extension of Japanese management philosophy, target costing has a completely different perception and application processes than the traditional perspective both in terms of design and pricing of the product and determination and management of the costs. Despite being characterized as a cost and profit management technique, target costing has an integrated application process in which both traditional and modern cost management methods must be employed together with marketing, production and engineering techniques. From this point of view, it has the characteristics of a system or a process rather than a technique.

Although the origin and first applications of target costing were Ford Motor Company in the USA in the early 1990s, Volkswagen in Germany and Marks-Spencer in England in 1930s, the first systematic application and development was by Japanese Toyota in the mid 1960s. In the late 1980s, it started to be used broadly in the USA, Germany and the other European countries. Target costing came into the Turkish literature in the mid 1990s and thereafter started to be discussed. However, these discussions always stayed at conceptual and theoretical levels. There were not any sufficient and comprehensive studies about its application level at that time. In order to fill this gap, a descriptive study on the private sector manufacturing companies listed in the "Top 500 Turkish Industrial Entities" announced yearly by The Istanbul Chamber of Industry (ICI) was made.

1. The purpose, scope and constraints of the sudy

1.1. The purpose of the study. The purpose of this study is to determine whether target costing is used by the Turkish manufacturing companies; and whether those companies using the technique apply the principles of the target costing application process in their customer expectation, profit margin, cost and price determination, cost reduction and management operations.

1.2. The universe, scope and constraints of the study. The universe of the study consists of the private sector manufacturing companies listed in the "Top 500 Turkish Industrial Entities" announced yearly by The Istanbul Chamber of Industry (ICI). Within 2006 ISO 500, there are 487 private sector companies. Of these, 15 companies which did not want their names to be revealed; and 21 companies operating in mining and electricity production industries, which were thought of not suitable for the application of target costing; were left out of the scope. Eventually, 451 companies listed in 2006 ISO 500 index made up the universe of the study.

The reason of selecting the companies listed in ISO 500 as the universe of the study is the belief that these companies are more institutionalized and

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hence they have the strong corporate discipline necessary for the application of extensive and complex techniques such as target costing and that more reliable and consistent information can be derived from these companies. Another reason for the selection of the manufacturing companies listed in ISO 500 is that target costing is more suitable for and used by manufacturing companies than the companies operated in the financial and service sectors, as indicated in most field studies in the literature as well.

2. The methodology of the study

2.1. The selection of the sample, the data gathering technique and the preparation of the survey form. The data used in the study consist of the information gathered via the survey applied to the senior department executives in the ISO 500 companies selected by the simple casual method.

According to the simple casual sample method, when the standard deviation and the variance of the universe are not known, the sample size representing the universe is determined by $n=(\pi(\pi-1)/(e/Z)^2$ formula. Accordingly, with 95% confidence interval and 5% error margin, the sample size of this study is calculated as $(0,5 \times 0,5) / (0,05 / 1,96^2) = 384$ companies. Because the calculated sample size is larger than 5% of the universe, it is to be derogated by multiplying by the correction factor (N-n / N-1). According to the formula, correction factor is approximately (451-384 / 451-1) = 0,149. Accordingly, the necessary sample size turns out to be $0,149 \times 384 = 57$ companies. In addition, the questionnaire form was delivered to the 451 companies within the scope primarily via e-mail. Then, appointments were made with 82 of the 109 companies which accepted to response and information was gathered from the executives via face-to-face interviews. Adding the 8 questionnaires which were seen suitable out of 27 questionnaires sent via fax, e-mail and mail, 90 questionnaires were evaluated. The number of the evaluated questionnaires forms 20% of the universe.

Considering the relevant literature and the past research about the subject in the direction of the purpose and scope of the study, the questionnaire is formed in three sections.

The first section consists of personal information of the respondents such as first and last names, titles and positions. Of these questions, position of the respondents is multiple-choice and others are open-ended.

The second section of the questionnaire consists of questions regarding general information about the company such as industry; manufacturing method and the number of personnel, and questions aimed at detection of the level of current applications in terms of the basic principles and applications of target costing. Some of the questions in this section are multiple-choice and others consist of questions rated between "(1) never – (5) always", "(1) unimportant – (5) most important", "(1) strongly disagree – (5) strongly agree" and "(1) very low – (5) very high" according to the fivefold Likert scale.

The third section that is not discussed in this study consists of questions related to the analysis of the companies which use target costing or a similar application, in terms of the benefits those companies obtain and the factors affecting the success of target costing. The questions in this section were prepared according to the fivefold Likert scale and were rated between "(1) strongly disagree – (5) strongly agree" and "(1) very low – (5) very high".

2.2. The method of analysis. No research was done before in Turkey aimed at the application and applicability of target costing in the Turkish manufacturing companies. Especially there is a lack of information about the determination of the companies applying target costing method and the level of target costing applications in these companies. For this reason, descriptive statistical methods such as percentage, frequency, mean and mode were used in the analysis of data obtained from the questionnaire study which was done in order to determine the application level of target costing. SPSS-13 (Statistical Package for Social Sciences) was used for the analysis of data obtained from the questionnaire.

3. The evaluation of the research evidence

3.1. The company profile. In this section, the number of personnel and the manufacturing methods of the participating companies, and the distribution of the respondents of the questionnaire in terms of position, were assessed.

The respondents are senior department executives. Of the respondents, approximately 1% are engineers (cost engineering), 82% are accounting-finance managers, 9% are manufacturing and design managers-supervisors, 3% are marketing and purchasing managers and 4% are employees in various departments (management director, auditor, strategic planner and controller). Accordingly, vast majority of the respondents serve in the accounting/finance department which is an inseparable part of the target costing teams used in the target costing method.

Approximately 37% of the participating companies use process-dependent manufacturing method, whereas 63% have assembly-oriented manufacturing method, which is stated in the literature to be as more suitable for the use of target costing.

Chenhall and Langfield-Smith state that there is an open relationship between firm-size and the management accounting applications. The application level of

complex methods such as target costing is indicated to be higher in larger companies (Chenhall and Langfield-Smith, 1998). Most of the participating companies are large-scaled and this is a positive aspect in terms of applicability of target costing.

3.2. The application level of target costing. In this section, the application level and form of target costing among the participating companies and the distribution level in terms of industries are given. It was not directly asked to the responding managers if they have used target costing method. Instead, in order to have better results and to see if they were using an application even if it is not named target costing, an encompassing definition and basic principles of target costing process are given in the survey. The respondents were asked to reply to the questions by taking this definition into consideration.

Target costing process is:

- a strategic profit planning and cost management technique;
- in which a product that is to be manufactured in accordance with the functionality and quality demanded by the customer and determined by market research;
- is sold at an estimated sale price (the price which the customers are willing to pay);
- by determining the product cost which will provide the profitability level requested by the company.

In the target costing process, sale price of the product determined by the market (customers) is the starting point of determining the target cost. The sale price and the desired profit margin must be determined before cost. In order to reach the target cost; concentration on the cost reduction opportunities in the design stage rather than production, constantly reduction of costs during the product life cycle, participation of all departments of the enterprise and all members of the value chain (accounting, design, manufacturing, marketing, customers, suppliers etc.) to the process of determination and reduction of costs, are required.

According to the target costing definition given above, 53 or approximately 59% of the 90 participating companies stated that they do not apply target costing at all, 14 (16%) stated that they apply in a good manner, 1 (1%) of them stated that it started to apply but has not yet fully do so, 10 (11%) stated that they are planning to apply in the future and 12 (13%) of the companies stated that they are applying a similar method to target costing under a different name.

The only enterprise which has just started to use the target costing method, the 12 which are applying a similar method to target costing under a different name and the enterprises which apply and which do not apply can be grouped. Accordingly, it is revealed that 63 out of 90 enterprises do not apply target costing, while 27 of them apply the method.

Approximately 11% of the companies stated that they have been applying target costing for less than 1 year, 22% for 1-2 years, 4% for 2-3 years, 7% for 3-4 years, 7% for 4-5 years and 48% of the companies stated that they have been applying the method for more than 5 years. It is seen that the target costing method which has been used by the Japanese companies for approximately 35-40 years and by the US and European companies for many years, is comparatively new in Turkish companies.

Approximately 67% of the companies apply target costing for all of the products and 33% apply for only some of the products. In the field studies done in literature, it is stated that target costing can be applied both to all of the products and to only limited products or product components throughout the company (Kim, Ansari, Bell and Swenson, 1999; Corrigan, 1996; Feil, Hook and Kim, 2004). As per these results, it can be said that target costing method is applied to all of the products throughout the company rather than to some products in the Turkish manufacturing companies. Besides, the level of the cost targets set by the companies supports this finding.

Approximately 70% of the companies determine cost targets for all of the products in the product line, 22% determine for only the new products in the product line and 11% determines for only the important parts of a product.

In respect of industries and the application rate, 3 out of the 5 companies which operate in the automotive industry and which responded to the survey apply target costing method and also the automotive industry, with 60%, has the highest application ratio of target costing. Automotive industry is followed by the others respectively, machine and paper with a ratio of 50%, nonferrous metals with 40%, textile with 38% and food industry with 36%. The industries with the least application ratios are as follows: iron and steel with 20%, oil-rubber-glass with 21%, cement with 25%, others (construction) with 25% and chemical industry with 29%. The participant companies in medical-optical instruments and medicine industries have 0% application ratios of target costing. The average application ratio of target costing among the 90 respondent companies is 30%.

Past similar researches done about target costing in other countries reveal the following evidence; 35% of target costing application ratio was found as a result of the research done on 60 Indian manufacturing companies in 2001 (Joshi, 2001). Similarly, 59,4% application ratio was found in 32 Dutch

manufacturing companies in 2003, 61% was found in 180 Japanese manufacturing companies in 1991-92 (Borgernas and Fridh, 2003), 40% was found in 120 US companies in 1999 (Braxton, 1999), 16,5% was found in 91 Swedish manufacturing companies in 2003 (Borgernas and Fridh, 2003), 41% was found in 214 Malaysian manufacturing companies in 1998 (Sulaiman, Ahmad and Alwi, 2004) and 38% was found in 78 Australian companies in 1998 (Chanhall and Langfield-Smith, 1998). According to the research done about specific management accounting techniques by Ernst and Young and the Institute of Management Accountants (IMA) in approximately 2000 companies worldwide (40% being manufacturing companies) including the Fortune 1000 companies, the application ratio of target costing among the companies is 26% and the ratio of the companies which plan to apply target costing is more than 40% (Ernst &Young, IMA, 2003). Besides, the highest industrial application ratios according to some of these studies are respectively: automotive (100%), electronics (88%), machine (83%) and medical-optical instruments industries (75%) in Japan (1992); oil-rubber, electronics, textile, steel and medical-optical instruments (100%), automotive and chemical industries (50%) in the Netherlands (2003); communication tools (67%), machine and metal industries (30%) in Sweden (2003).

In the frame of these data it can be claimed that the application ratio of the Turkish manufacturing companies both in terms of average and in terms of industry is low, when compared to other countries. In addition, the common evidence emerging from these studies is that target costing is applied more in high-tech based assembly industries (such as automotive, electronics, machine and textile industries) rather than the process oriented industries (such as medicine, food, iron and steel, chemical, oil-rubber-glass and cement industries). The results of this study on the Turkish manufacturing companies support this claim as well.

3.3. The application level of target costing in the Turkish manufacturing companies. In this section, businesses using target costing are evaluated in order to determine the application level of target costing, in terms of the practices guided by the basic principles of target costing.

During the examination of the field studies in the literature, it was determined that target costing is more suitable for the companies which produce a wide range of products in small amounts by combining numerous parts together, than for those continuously producing a few number of products in large amounts (Monden and Hamada, 1991). In other words, target costing can be more easily executed in the assembly-oriented industries than in the process-oriented ones (Morgan, 1993; Gagne and Discenza, 1995; Hergeth, 2002; Dekker and Smidt, 2003).

A vast majority such as 70,3% of the companies applying target costing indicate that they have "manufacturing-assembly" oriented and 29,6% claim that they have "process-dependent" manufacturing methods, which is an expected situation. Another evidence supporting this result is the length of the product life cycles (new product development and redesign of the existing products frequency) of the participating companies.

Because frequent change of design in assembly industries is mandatory, product life cycles are shorter than those of the process industries. For this reason, target costing is more often used by the companies which frequently change design and which have shorter product life cycles (Hergeth, 2002; Morgan, 1993).

40,7% of the companies applying target costing introduce new products to the market in less than one year, 29,6% of them introduce in one to two years. The reason of approximately 70% of the companies (40,7% + 29,6%) having short product life cycles is that most of them (70,3%) have assembly-oriented manufacturing methods.

The competition environment of the participating companies using target costing or similar methods was aimed to determine by directing questions to the executives about how they perceive their operation environments.

It is realized that most of the companies applying target costing or similar methods operate in an environment of very high ambiguity and competition. Also in the past studies in the literature, it is stated that especially Japanese companies developed and applied target costing because of the increasing ambiguity and the intense competition in the market (Ansari, Bell and CAM-I, 1997; Shimizu and Lewis, 1998; Dekker and Smidt, 2003). Therefore, the use of target costing or similar methods in the markets with environmental ambiguity and high competition is quite important for the success of the companies. In conclusion, it can be claimed that there is an increasing competition combined with a dynamic environment, and this situation encourages the application of target costing by the Turkish manufacturing companies.

Questions were directed to determine the strategies pursued by the companies applying target costing in order to ensure competitive advantage, and the degree of importance those companies give to the strategies.

According to the statistical averages and percentages, the most important competition strategy components for most of the companies applying target costing, are respectively (4,60 - 85,2%) "offering more quality and functional products" (4,44-92,6%), "manufacturing the products with lower cost and offering with lower price" (4,38-85,1%), "offering more and better product features than the rivals" (4,27-74,1%), "assuring that the products be delivered to the customers quickly" (4,19-88,9%) and "introducing new products to the market against the rivals" (3,56-59,2%). Accordingly, it is observed that the companies give as much importance to the cost leadership strategy as the differentiation strategy. At the same time, most companies are sensitive about introducing new products to the market before the rivals. It is not possible for companies to gain sustainable competitive advantage by following low cost-based differentiation strategy, because of the fierce competition they face. For this reason, today's competitive environment requires the success-requesting companies simultaneous competition about price/cost, quality, functionality and speed, which are of the strategic competition elements characterizing a product. In order to survive, a business must pass or at least catch the performance of the rivals in all of these four dimensions.

In conclusion, it is revealed that the companies which use target costing or similar methods pursue balanced competition strategies.

Questions were asked in order to determine the examination degree of information about price, sales volume, customer demands and expectations which are also basic components of market-oriented target costing in the market analysis done by the companies using target costing.

It can be stated that most companies give enough importance to the determination of the elements of market research which is the starting point of the application of target costing. However, it is necessary for the companies to make more effort about determination of the "probable price that customers may want to pay for the product" (4,23-85,2%) which is a basic principle of target costing application.

Market-oriented target costing process executes a product development strategy that focuses the businesses to the principal opportunity, that is, the ultimate customer. Understanding and revealing the evident and secret needs of the customers in order to find the product features (in terms of price, quality, and functionality) which provide maximum customer satisfaction, are the most important components of target costing process and need to be continuously analyzed during the process. Because if customer demands and needs are misunderstood or not understood at all, product development and design will be delayed and that misunderstanding will be the most important reason for the product failure in the market. Therefore, questions were asked about at which level of the manufacturing process, how frequently and by which means the companies which use target costing and those which do not use assess customer demands and expectations, in order to determine whether those companies make customer analysis suitable with target costing.

According to the answers, giving more importance to the determination of customer expectations before product design (3,89-70,3%) and continuously reviewing during the design stage (3,72-55,5%) by most enterprises is an expected situation. Notwithstanding that, this situation creates a limitation in the enterprises not giving enough importance to pre-design market research, in terms of the determination of customer expectations being market-oriented. Therefore, companies must give more importance to the pre-design customer analysis while determining the future products which will satisfy their customers and will be sold for profitability as well. Besides, instead of obtainment of the customer input via feedback (2,84-40,7%) from the suppliers and sellers by the companies, further use of systematic methods suitable for establishing customer input, such as survey applications (3,83-59,2%) is a positive situation for the successful application of target costing as well.

During the target costing process, the enterprises must do product and profit planning in consequence of the market research after the determination of the customer needs, suitable product features and the estimated sales volume and price, and before passing to the design stage. These plans will be the basis for the determination of the target costs of the products. For this reason, the results regarding whether the participating enterprises do long-term product and profit planning which is one of the fundamental requirements of target costing process, and the degree of application are impotant. Most of the (4,33-88,8%) enterprises' employment degree is "Long-Term Product and Profit Planning" and this is a positive situation for the successful application of target costing. As a consequence, the companies are not doing or not giving the necessary importance to long-term product and profit planning, which is fundamental both for obtaining the desired profitability from the product and for the success of target costing applications, need to review their present conditions and establish or revise these plans.

The results concerning which methods and how frequent the participating enterprises use while determining the sale price of a new product, which is

one of the most important dimensions of the target costing process, are unexpected.

The enterprises frequently use the "cost + profit" (3,46-44,4%) method. This is as much of an unexpected situation as their use of the methods "basing on the price which customers are willing to pay and/or the price that will provide achieving the target market share" (3,52-51,8%), which are suitable pricing methods for target costing conception. The least used method is the competition-oriented pricing method which is based on setting the price "equal to or lower than that of the rivals" (2,74-3,7%) which is a component of market-oriented pricing method that also reflects the target costing conception. The role of the costs at the stage of determining the target price in target costing application is very unimportant. There are numerous factors to be taken into consideration in a pricing decision. However, among the factors affecting the pricing decisions of the enterprises, cost is usually the easiest and most strictly controllable factor by the enterprises. Therefore, the cost plus pricing method, which is commonly used by most companies, is completely opposite to the application logic of target costing. Because the target sale price in the target costing method is the estimated price the prospective customers are willing to pay for the product. This estimated price is primarily based on the simultaneous prediction of the value given by the customer to the triad of price, quality and functionality. In addition, it must not be forgotten that this estimated price is to reflect the balance between numerous factors such as the market share desired from the product, the prices of the rival products, long-term sale and profitability targets of the company and the image of the company. Hence, the dependency of product pricing to cost, will be a handicap for the successful application of target costing.

In addition, despite that the companies give pretty much importance to the determination of "the estimated sale price which customers are willing to pay" that is one of the factors companies take into account in market research, and that they have a market-oriented perception, the high application frequency of the cost plus method creates a conflict. One of the evaluation limitations of this study is that the factors to be taken into account in the determineng the product's sale price, in order for the aforementioned conflict and the pricing perceptions to be better explained, are not examined.

The methods that the participating companies use in the determination of the target profit margin of a new product, which is one of the basic components of the target costing process, are asked to the respondents.

According to the answers, the most commonly used method by the companies in determining profit target or profitability ratio is, because of some advantages it has, the return on sales (ROS-37%), as mentioned in the literature as well. Calculation of the profit as a percentage of the estimated cost of the product (22,2%) is completely contrary to the understanding of target costing. Because in the target costing application, the target profit margin must be determined independently of the costs and based on the long-term profitability analyses which are done in parallel with the financial objectives and the strategy of the enterprise. Profit margin calculated as a percentage of the estimated cost of the product which reflects the traditional cost plus approach is, however, calculated based on the expected cost of the product and contrary to target costing; in this approach, profit margin, but not the cost of the product, is the dependent variable. For this reason, it is revealed that the companies using this method do not have the sufficient perception in terms of strategic profit management, which is one of the basic components of target costing. Nevertheless, the total application ratio of the return on sales (ROS), return on investment (ROI) and the overall profitability of the products in the product line methods which are stated to be suitable for target costing application and are applied broadly, being 74% among the Turkish manufacturing companies exhibits a suitable application profile to the understanding of target costing.

As a result, the enterprises that determine cost-based profit margin should renounce the understanding of determining target profit margins or profitability rates based on costs and apply methods appropriate for strategic profit management.

The enterprises included in the research were asked several questions concerning the stages they make cost estimation which is made at several stages for determining target cost of new products as the final objective of target costing.

Most of the enterprises make cost estimations seriously and systematically, by 77,8% percent "after the identification of product as a concept", by 96,3% "during the product designation phaze", by 22,2% "after the production". Accordingly, the concentration of cost estimation of enterprises at stages before the production and especially at the designation phaze is expectable from the point of the application mentality of target costing. Therefore, in the target costing process, instead of beginning the designation of the product and waiting for the realized costs, initially the target cost is determined (cost estimation is made) for the product that will meet the functionality and the quality customers seek and also the profit margin the enterprise seeks, by means

of a market research and afterwards the product is designed in accordance with this target cost and cost estimation. In other words, the costs that will exist during life cycle of the product are determined at pre-production designation phase and the production is done in line with these costs after the designation. So all the costs concerning product are estimated or determined at pre-production phase. Also, the fact that 78% of the enterprises that apply target costing states they do not make any cost estimation "after the beginning of the production" and 100% of these enterprises do not make any cost estimation "after the end of production", reveals clearly this quality of application process of target costing. These results show that enterprises have one of the basic reasons for the application of target costing.

While traditional approaches focus on determination and controlling of post-production costs, the target costing approach is based on the management and determination of costs before the materialization of costs. Therefore, target costing process necessitates a cost estimation system that provide an increasing accuracy level from the concept phase of a product until being ready for the designation and an extensive cost planning.

In order to identify the extent of the cost estimation systems and cost planning, the cost components that take place in the cost estimation of a new product were asked to the enterprises included in the research.

63% of the enterprises using target costing uses pre-production costs, 100% uses production costs, 77,8% uses marketing costs and distribution/logistics costs, 59,3% uses "service/support costs and 63% uses recycling costs in the cost estimations. Accordingly, the estimation and determination production costs as the cost component in the pre-production phaze are an expected situation for the application mentality of target costing. On the other hand, the number of enterprises that estimate pre-production costs like market research and research/development (R&D) costs is lower than the expected for the target costing. Attaching inadequate importance to market research especially to customer analysis and also allocating insufficient resources for R&D activities can be stated as reasons for this situation. So it can be said that no estimation and cost planning regarding these cost components are made. The fact that no research regarding R&D activities has been done constitutes a constraint for assessment. Similarly, it can not be said that the number of enterprises that estimate service and recycling costs in the pre-production phase is high. However, the majority of enterprises' inclusion of marketing and distribution costs in the cost calculation as the cost component of a new products is a positive situation for the success of target costing.

As a result, according to these findings it can be stated that the majority of the enterprises that apply target costing or a method similar to target costing do have an extensive cost estimation system and correspondingly apply a successful cost planning. Also, the replies of the enterprises to questions regarding product life cycle costing approach and cost planning utilization degree support these findings.

Most of the enterprises that apply target costing state that they do "cost planning" (4,22-85,1%) for new products and they generally adopt the "product life cycle costing" (3,68-51,8%) approach.

The results regarding the determination of costs and the use of cross-functional teams for cost reduction operations and the usage degree by the enterprises included in the research are presented.

The use of cross-functional teams (4,23-81,4%) for the determination of costs and cost reduction operations is significantly high. Although this result is expected, for the enterprises where the determination of costs and the use of cross-functional coordination for cost reduction operations are low, this constitutes a constraint for the successful application of target costing because target costing necessitates a very high coordination among departments and forces departments for coordination. The coordination provided by the cross-functional teams that are composed by the participation of the departments in the enterprise and other value chain representatives, provides that the customer demands about the product and the strategic aims of the enterprise will be understood by all departments and all other value chain members. In this coordination process the basic element that keeps the teams together is the target cost. In order to search for cost saving opportunities regarding the new product in the all phases, from the designation phase to after sale services, these teams which will take the responsibility of cost determination, will analyze product design, raw material requirement, production and post-production processes systematically and provide the decrease of unit costs to target cost level. Therefore, the use of these teams which are responsible for result of target costing applications is the most important factor in the target cost applications. However, just the use of cross-functional teams is not enough for the success of target costing; also the maximum participation of all members of value chain should be provided.

The participation level of departments to cross-functional target costing teams in the enterprises can

be said to be high. However, the low participation rate (2,91-29,6%) of suppliers that should be the most important members of target costing teams, is a constraint for the success of target costing activities.

As a result of these data, it is impossible to be successful if the cross-functional teams are not utilized in product cost estimation and cost decreasing process or the necessary importance is not given. At the same time, it can be said that the utilization level and the structure of cross-functional teams depend on enterprises' adoption level of product life cycle costing approach and the scope of cost planning. Most of the participating enterprises' possession of the understanding of product life cycle costing and the scope of cost planning support these findings.

The results regarding the application level of the activities that the enterprises involved in the research do for decreasing the product costs are presented below.

The cost decreasing activities of the enterprises according to application level are respectively "trying to supply cheaper materials and parts without compromising quality" (4,52-88,9%), "examining and redesigning pre and post-production phases" (4,52-96,3%), "concentrating on product design" (4,15-77,7%), "extracting the features and functions that increases the product cost" (1,96-3,7%) and "using low-quality materials and parts" (1,08-0%).

According to these results, it can be said that majority of the enterprises tend to behave according to target costing in order to decrease the costs of the products. Because target costing is a strategic profit and cost management process, which aims at decreasing the total costs throughout the life cycle of the product by concentrating on its design which will enable it to be produced at a cost level and the firm will reach the target profit level or market share without giving concessions from the quality, feature and functionality of the product that the customers are expecting and are willing to pay for. As understood from this definition, in the target costing method, neither low quality inputs should be used nor the functions and features that the customer is willing to pay for should not be extracted from the product in order to decrease costs. On the contrary, the target costing approach underlines the fact that an enterprise should reach and go beyond the rival products in every one of these components in order to sustain its competitiveness. At the same time, target costing accepts the design of products and processes as the critical point of cost management and cost decreasing. Because more than 80% of the life cycle cost of a product is determined during the design and development stages and because the product and process technologies begin to be more integrated, both the design of the product and the activities needed to produce the product is the most important factor for cost decreasing. This is why during the target costing process, by focusing on the design, which will enable cost decreasing throughout the life cycle, it is determined whether the design may or may not cause after production costs which are not appropriate for customer value and income. Thus, in this way some time consuming and expensive changes that might be faced are eliminated beforehand and both the cost of the product and market entrance period are decreased.

At the same time, the value engineering technique during the design of the product, the simultaneous engineering applications during the design of the products and processes as well as the kaizen costing approach which expresses the constant improvement of the processes before and after the production all give an answer that supports this finding. In addition to this, during cost decreasing and management the use of Total Quality Management, Activity Based Costing/Management and On Time Production is very important in terms of the success of the target costing applications.

The methods, tools and techniques that can be used to decrease product costs by companies that use target costing are listed according to their application degrees as "constant improvement (kaizen)" (4,48-100%), "total quality management" (4,33-92,5%), "value engineering" (4,00-59,2%), "value analyzing" (4,00-59,2%), "on time production" (3,96-70,3%), "action/operation based costing" (3,92-62,9%) and "simultaneous engineering" (3,23-44,4%).

As a result, it is a positive fact – in terms of the success of target costing applications – which of these methods, tools and techniques that can be used in decreasing production costs and their management is highly used by many companies. Although the fact that the amount of value engineering/analyzing, total quality management and Kaizen costing techniques which enable focus on product and process design plus detection of cost savings are used more by companies to decrease costs to desired levels and their management, it can't be said that the usage level of specially simultaneous engineering between companies is high. This is why, companies must give more weight to the simultaneous design of products and production designs to benefit from target costing applications greatly.

The results according to the application degree of strategies that will be used when companies determine that the cost foreseen at the designing stage will be exceeded or when it is determined that it can't be decreased to target cost levels assessed before production are shown below.

Most of the companies give priority to decreasing the amount of profit expected (3,37-48,1%) and increasing the foreseen price of the product (3,12-37%) strategies. Decreasing the profit margin by the management which is determined according to the strategic purposes of the firm may be an appropriate strategy to increase the market share of the product and to position it in the market. Although decreasing the target profit margin may seem negative at first glance, with an increase in sales related with market conditions or with an increase in the cost of the product related with its lifecycle, reaching the targeted profit rate will be possible. At the same time, this strategy can be analyzed according to the total profit rate of a product group which a product belongs to. Before taking a decision on lowering target margin of profits desired, these situations should be well analyzed.

Secondly, in the target costing implementations, increasing of target sale price, which will be determined to depend on wishes and ability to pay customers independently from cost, may be the last strategy which should be evaluated because in the competitive market conditions, acting with cost-plus pricing contrasts strongly, with target costing implementation reasons. In order to determine a high price level, a product should be really new, which can raise its value perceived by customers and should be different from its rival products or business should have the monopolist or price determining position in the market. But, this situation should be carefully analyzed in terms of market share or sales volume which will enable the level of profitability which the business desires. However, it can be said that one of the reasons of high level implementation of this strategy is that companies quite use cost-plus method in pricing of new products. In order to clarify the reason why this strategy is chosen, the fact that factors, which should be taken into account while determining target sale price, have not researched in this study does not constitute the assessment deficiency.

The third strategy of companies to define the implementation degree is either abandoning the product or disapproving [discarding] its production (2,36-11,1%) as a last resort. Because, too much time and effort have been allocated to the product. Although in successfully implemented cost targeting practices, the possibility of abandoning the product is too low, this strategy should be resorted just in the cases where alternative solutions exhausted for achieving cost targeting. However manufacturing of any product that doesn't contribute to the strategic goals of the business should not be let.

The fourth strategy of companies for implementation degree is shrinking product qualities and functions (1,50-0%). This strategy should be implemented if diminishing qualities of the product affect market price, which is used for determining the target cost, positively. The strategy of raising target cost of a product should be resorted in extraordinary cases if presence of a specific product increases the demand of other products that enforces continuation of the product line; or in cases on time product supply prevents market share and income loss. In such cases cost increases should be dealt immediately by over viewing design process in detail and developing other counter measures. Incautious measures distort necessary discipline for achieving target costs.

Consequently, half of the companies' primary strategy of increasing selling prices affects the implication of cost targeting negatively. Scarce need for application of increasing target cost strategy is particularly good.

The results inferred from the answers of research-partaken companies to the question about the level of relationship with their suppliers are submitted below.

Among the companies using target costing and in terms of the priority given to the participation in the statements reflecting the degree of relations with the suppliers; although companies stated (3,93-77,7%) that during the stage of product and process design continuous coordination with the suppliers is positively accepted; sharing all kind of information including design costs via regularly incorporating important producers in the product design process reflecting the quality of this coordination (2,96-40,7%) and the low level of support and education provided to producers about the problems they face are negative situations. Sharing information on design and costs as well as other cost management techniques between companies and suppliers in order to find proper ways to decrease costs is the basis of the benefits of target costing process. On the contrary, it could be affirmed that the relationship between companies and suppliers is built on sharing technical information regarding the design and keeping suppliers under control (4,08-70,3%) through determining cost objectives rather than sharing information on the product design. In other words, there is pressure to achieve these objectives via predicting costs of the product components provided by the supplier instead of ensuring the participation of suppliers in the cost predicting process.

Similarly, these findings are also supported by the cost predictions of suppliers for new products and the low degree of involvement in the cost decreasing process. In addition, although the dependence on companies in terms of the job or the companies control over suppliers is low (3,42-48,1%), the pressure of the companies, which have a cost pressure on the

suppliers, may only be balanced by helping the suppliers' lower costs. This can only be achieved by putting suppliers inside the product cost analysis before determining target costs, helping suppliers with the problems they face during design problems and sharing information plus experiences related to quality, delivery, customer wishes and cost management. By this way, this strategic cooperation will enable early assessment of the prices of products and will also enable new ideas to come forth about companies making alternative design possibilities, which makes it easier to reach the desired functioning level during decreasing costs.

As a result, during target costing, it is almost impossible to decrease costs without the participation of suppliers. The suppliers must be seen as part of a developing firm and a strategic partner. This is why, if the weak relationship between the suppliers and the enterprise turns to a more cooperative structure and if the integration degree of the design process is increased, then it is more likely that the gain from target costing and the possibility of it being applied successfully will increase.

Conclusion and suggestions

The primary results of this evaluation study concerning the application level of target costing among the Turkish manufacturing enterprises (ISO 500) can be summarized as follows:

- The companies applying target costing or having a similar process have extensive market analyses and marketing information systems.
- They follow balanced competition strategies.
- They must give more importance to determine the customer expectations before the product design, in order to fully provide the expected benefit from target costing.
- Their pricing of the new products by depending on cost usually poses an obstacle to the successful application of target costing.
- They have comprehensive cost estimation systems and can be considered as applying cost planning successfully. Correspondingly, most of these companies have the understanding of product life cycle costing.
- If weak relationships between these companies and their suppliers are transformed to a more collaborative structure and if the integration degree of the design processes is increased, the benefits to be gained from the target costing process will increase evenly.
- Majority of these companies operate in competitive market conditions.

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