

Management Accounting of Costs: Approaches to Calculation of the Target Cost of the Product

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Abstract

This paper deals with the scientific and practical approach to fulfillment of management accounting of target costing at the industrial enterprises. We offer algorithm for closing gaps in the process of bringing the planned and forecasted cost of the product to its target value. Different variants of the integrated management accounting system have been studied basing on the method of target cost of the product calculation. Presented are the techniques of costs optimization on the basis of target rates within the scope of the target cost of the product definition.

Keywords: costs, target costing, management accounting, conception, analysis

1. Introduction

Target costing method, originating from the Japanese enterprises, is a set of techniques and methods for calculating the target cost of the product at the design stage. The calculation is based on the functional features of the product, creating its value from the point of view of the consumer and a set of techniques designed at optimizing the costs in line with the development strategy of the company. It is assumed that the target costing, that is of estimated costs of a new product manufacturing, the value of which is generated under the influence of market demand, is a function of management accounting. However, experts in management accounting at the enterprises of the Russian Federation do not fully participate in the formation of the product structure, determination of the types of work and resources associated with its production. In some cases, they are consulted with, but such consultations, as a rule, bear informational and non-binding character. They cannot be regarded as a complete substitute for cross-functional teamwork, having a specific, definite purpose - to optimize future costs.

Using the classical approach in the framework of TC method we select six basic steps for target costing. They represent a work plan for the cross-functional team: the definition of the average market target price by the results of the market analysis; target profit calculation (agreed position of owners and managers); preliminary estimation of the target cost of new products; definition of planned product cost (based on the actual costs of previously produced products of the same type or the similar products); identification of gaps in the value (comparison result of previously calculated target cost and forecasted costs of the product); development of measures for reduction of costs and final determination of the target cost of the product.

In this case, the method of target cost (TC) of the product calculation cannot be regarded as an independent, self-contained element of the management accounting system. Essentially, TC can be compared with a vessel to be filled with contents.

Definition of target costs generated by the market - is only a starting point for all further calculations. Different methods of costs calculating may be the basis for the target costing of the product: direct costing, absorption costing, throughput accounting (TA), activity based costing (ABC), etc. In other words, there occurs a problem of an integrated system of management accounting development on the basis of the TC principles.

History of the method development has been presented in the works of Sharaf-Addin, H., Omar, N., Sulaiman, S. (Sharaf-Addin, Omar, & Sulaiman), Burrows, G., Chenhall, R. (2012). The problem of target costing of the product is dealt in the research works of Everaert, P., Swenson, D. W. (2014), Andersch, A., Buehlmann, U. (2013), Kee, R., Matherly, M. (2013), Filomena, T. P., Neto, F. (2013), Pennanen, A., Ballard, G. (2008),

Kocsoy, M., Gurdal, K. (2008), Braun, S. C., Biedermann, W. (2008) Afonso, P., Nunes, M. (2008), Mévellec, P., Perry, N. (2006), Bayou, M. E., Reinstein, A. (Bayou & Reinstein, n. d.), Kulikova, L. (2014). However, the problems of the target standards management for costs optimization are paid insufficient attention.

The aim of the study is to clarify the algorithm of target cost of the product formation, to develop an approach of bridging the gap between planning-estimation and target direct material costs by the target rates management.

2. Method

Due to changes in the market situation, the system of targets may eventually be revised, and as a result, the target cost of the product itself may be adjusted. Consequently, we can speak about certain and specific stages of the time cycle of the product target cost (PTC). Calculated at the design stage of the product, it will be subject to verification at the next stage - the stage of production. Perhaps there will be the need in the repeated recalculation or adjustment of the target cost. Herewith, the stages of the PTC cycle may not coincide with the stages of the product life cycle, although, of course, the relationship between them can be traced. This discrepancy is explained, firstly, by the lack of need in terms of target cost of the product subject to be discontinued (the last stage of the product life cycle). Secondly, by the presence of several adjustments of the target cost on condition of the long-term presence of the product at the manufacturing stage.

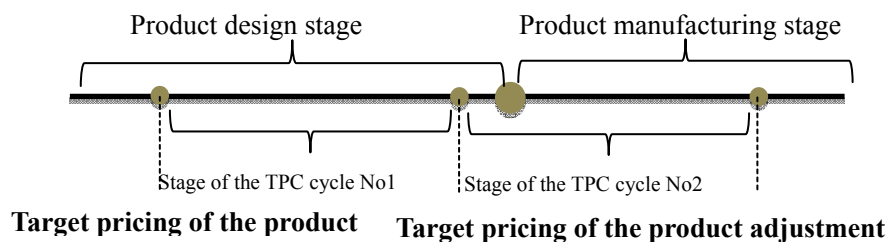


Figure 1. Target pricing and adjustment of the product

Therefore, understanding of the time cycle of the target cost will help to manage costs more effectively in future.

As a rule, in the process of target costing of the product, at the stage of the gap in value determining, measures are developed to reduce costs; their purpose is the reduction of the gap to a minimum. However, one can imagine a slightly different approach, differing from the classical one. It is already possible to try to take into account the wishes of consumers at the stage of planned costs determining, and to choose the cheapest materials (ingredients) or processes. As a result, the last three stages of the target cost of the product calculation will be adjusted: definition of planned product cost (based on historical data, but taking into account the consumers' wish and by forming the structure of the product using the cheapest ingredients); identification of gaps in the value (planned costs for the product may be less than a previously calculated target cost of the product); development of measures for costs optimization, which is understood both as an increase or decrease in the cost of the product by the selection of optimal processes and product structure).

Costs for materials, making the real basis of the future product should be calculated by the target rates. The target rate should be construed as the absolute resource consumption value for the production of a production unit, determined at the pre-production stages in the process of reconciling the consumers, shareholders, or partners' targets, and adjusted at the subsequent stages under the influence of external and internal environment factors. Formula of target rate for materials:

$$\text{Target rate} = \frac{\text{Net surface of the materials, dm}^2}{\text{Use of materials, coeff.}} \quad (1)$$

Special mechanisms of target rates management are used in the changing conditions of internal and external environment. In particular, the target rates can be adjusted (see. Figure 3) under the influence of consumers (adjustment of the purchases volume, new orders), partners (search for other material with properties more attractive for the consumer), competitors (search for ways to reduce the standards after analyzing the costs of competitors), the market in general and the life cycles of the product in the market (LCPM) ("innovation", "stability", "maturity", "decline"), shareholders (change in expected profits may cause searching for the ways to reduce the target rates), designers, managers (implementation of lean production schemes), personnel (increase of the staff skill, new motivation system can reduce the target rates).

According to the IMA Institute (Statements on Management Accounting IMA), there is an obvious link between TC and other techniques and methods of management accounting, which may be divided into the method of

costs calculation by the life cycle stages of the product (LCC), costs calculation by the types of activity (ABC), V-analysis or VA (Value Analysis) etc. (Figure 2).

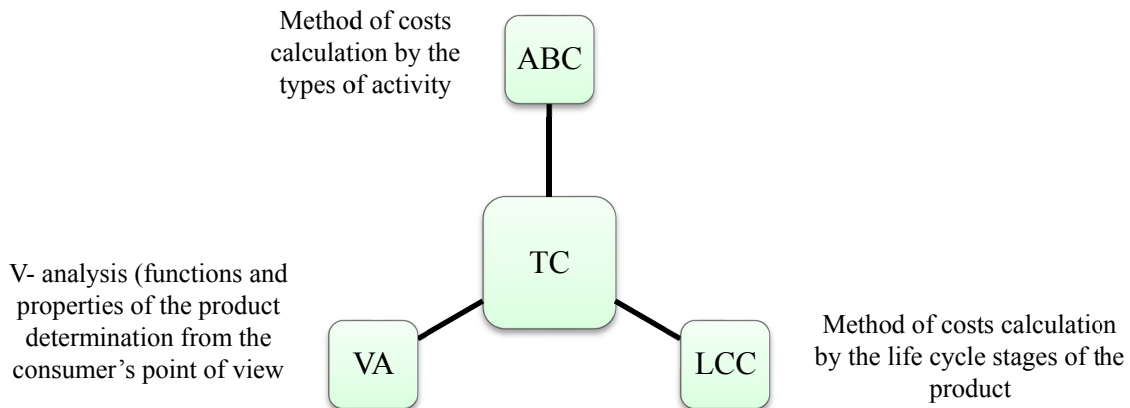


Figure 2. Integrated system management accounting based on the TC principles (according to IMA)

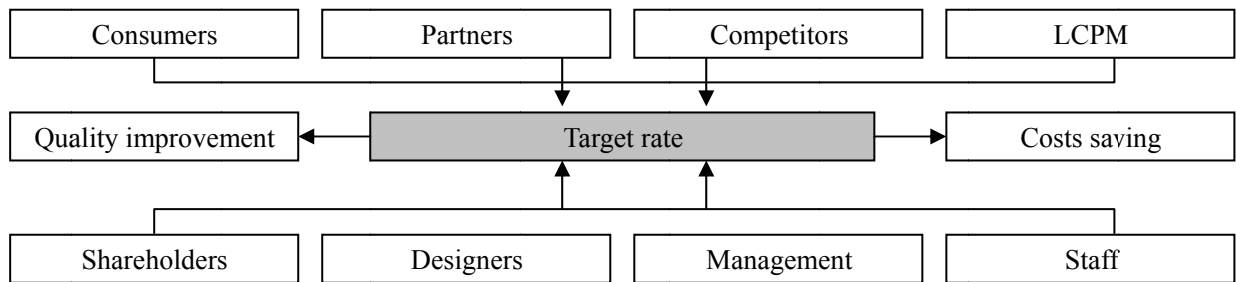


Figure 3. Factors influencing the target rates

ABC method (or TD-ABC as a more modern approach) simultaneously solves two problems - more accurately identifies the target cost of the product and the target value of indirect costs, since they depend on the cost-drivers (factors causing these costs). LCC method helps to determine the financial result of the product full life cycle, which is important when making a decision on the definite product manufacturing. As part of the V-analysis the functional features (functions) and properties of the product are defined, creating value from the point of view of the consumer. The functions are divided into basic and secondary from the clients' position.

At the same time, the presented integrated model cannot be regarded as an invariant one. Lean production will require the introduction of management accounting of costs techniques in the context of the value stream of the product creation (VSC method). The direct costing method is gradually replaced by the TA (Throughput accounting). These methods introduce new categories of target costs.

3. Result

As an example, let us present the results of the target cost calculation of the new model of shoes. The company simultaneously produces the shoes and has an extensive network of retail outlets. After deducting the estimated market price for a pair of shoes (2020 monetary units), the expected rate of distribution network return (505 MU), the retailer's cost (454.5 MU), the expected profit of the manufacturing plant (212.1 MU), the share of administrative costs (106.1 MU) and overhead manufacturing costs (111.3 MU) we receive a direct pre-calculated target costs for the product (631.0 MU).

Let us consider the algorithm for determining the direct target costs, while paying more attention to the calculation of direct material costs as a main cost element in the material-intensive production of shoes. Overhead costs must be coordinated with the product using annual rates of distribution, and at the same time the costs by the product life cycle stages shall be taken into account.

As consumers prefer the new model of shoes to be black, made of natural materials, light, comfortable, frost-resistant, to have properties that would allow consumers an easily control of the machine in winter, these and other requirements are taken into account immediately in the formation of the cost structure of the product.

For this purpose, those details of the product are being revealed, which are responsible for these properties, priorities are set and the planned cost of the product is formed on the basis of direct costs (Table 1, lines 1-7).

$$\text{Target rate} = \frac{24,84}{0,655} = 37,92 \text{ dm}^2$$

As a result, the target rate of leather consumption considering the leftovers constitute 37,92 dm². This value will form the basis of making the decision of the leather procurement (procurement plan for the total amount of activity). The direct costs of the product amounted to 512 MU per one pair of shoes. There is a gap in the cost - 119 MU per one pair of shoes (631.0 - 512.0). Taking into account the wishes of customers, it is necessary to improve the quality characteristics of materials (and thus increase the cost of the product bringing it to the target one), and herewith to, determine the directions of further costs reduction for optimization of production processes. This is the fragment of how one of the cost structure adjustments could be done by changing of the parts and processes. One solution is – the combining of two parts of the top (the external and the internal bootie). This reduces the number of cutters (metal saving), as only one part is cut instead of two parts. As a result, the costs of service production units are reduced (and hence, the overhead costs).

However, the waste volume is increased, since the percentage of materials use is reduced to 64% and, therefore, the material costs per unit are increased. In other words, the percent of materials use reduction from 65.5% to 64% results in growth of the target rate:

$$\text{New target rate} = \frac{24,84}{0,64} = 38,81 \text{ dm}^2$$

The new value of the material subject to be purchased is - 235.2 MU per a pair of shoes (38.81 × 6.06). However, the decision to combine the top parts also affected the reduction in the number of technological operations. The following operations shall be reduced: materials allowance for the seam; reduction of working lines (including thread saving). Consequently, the auxiliary material costs and labor costs decrease. The next costs optimization involves changing of the type and cost of materials. Let us show a fragment of this optimization. For example, the interchange of material for the details of the top: real leather Velour (average price per 1 dm² of leather - 6.06 MU) is changed to a more flexible high-quality and expensive skin Debut (price 8.70 MU, use of materials, 69 %). As a result, the material cost becomes 313.2 MU (24.84 dm²: 0.69 × 8.70 MU.). Unit costs are increased by 78 MU (313.2 - 235.2). The material for lining parts is also subject to replacement: natural wool is changed for the natural fur. Material of intra backing is changed for a more expensive (Jersi 270), etc. The final structure of the target costs for the model after the second stage of optimization is represented in Table 1 (lines 8-14). Thus, the target cost on the basis of direct costs amounted to 631 MU per one pair of shoes.

Table 1. Direct costs structure for the model of shoes (men's shoes)

No	Parts of the model	Resource	Weighted average net surface (considering the line of shoes sort), dm ²	Use of materials, %	Target rate, dm ²	Average price, MU/dm ²	MU sum/ pair of shoes
Calculation of planned estimated costs (for low prices)							
1	Parts of the shoes top (vamp, bootie, quarter, padded collar, tongue etc.)	Natural leather Velour, sort III	24,84	65,5	37,92	6,06	229,8
2	Parts of the backing (inner and outer quarter, vamp, insole etc.)	Natural wool, sort III	21,01	64	32,83	0,47	15,4
3	Parts of the intra backing (vamp, bootie etc.)	Cotton cloth	13,49	68	19,84	0,61	12,1
4	Parts of the shoes bottom (sole as the purchased semi-finished product, insole, toe puff, framing etc.)						100,6
5	Auxiliary (threads, needles, glue etc.)						60,5
6	Labor payment costs						93,6
7	Total direct costs						512
Result of costs optimization							
8	Parts of the shoes top (vamp, bootie, quarter, padded collar, tongue etc.)	Elastic leather Debut, sort II	24,84	69	36	8,7	313,2

9	Parts of the backing (inner and outer quarter, vamp, insole etc.)	Natural fur	19,19	72	26,65	2,48	66,1
10	Parts of the intra backing (vamp, bootie etc.)	Jersi 270	13,49	66	20,44	0,76	15,5
11	Parts of the shoes bottom (sole as the purchased semi-finished product, insole, toe puff, framing etc.)						103,4
12	Auxiliary (threads, needles, glue etc.)						55
13	Labor payment costs						77,8
14	Total direct costs						631

4. Conclusion

The presented approach enables us to understand the overall impact of changes in the structure of the new product on the targets and evaluate the financial effects of different solutions, such as design or engineering. The recommendations given in the article allow to calculate the targeted financial and non-financial measurement, coordinate the work of management, engineering, service and production departments at the stage of product design, effective control of costs and benefits of the company.

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