



IMPLEMENTING TARGET COSTING METHOD IN A CONSTRUCTION PROJECT

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Abstract Article discusses the implementation of target costing method in a construction project that takes place in Romania. There are treated the concepts of cost and target cost of specialty literature and also are presented the stages to be completed in implementing target costing method. To implement targeted costing method a case study was done on a building project. The article ends with authors' conclusions based on implementing target costing method in a construction project and the advantages and its limits.

Key words:

Target costing, construction project, cost management, direct costs, indirect costs

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Introduction

This article aims to address the implementation of target costing method in a construction project by treating theoretical and methodological concepts and principles governing this method used in modern cost management.

Literature review

In American literature, one of the definitions of cost is an expense or an amount of expenses associated with (and recognized) a resource consumed, a business, a product made or a reporting period (Horngren *et al.*, 2006). In addition, other authors state that the purpose of cost calculation lies in identifying the causes, not just their transfer on cost carriers (Briciu, 2006). In French literature the cost is defined as the algebraic sum of expenditures corresponding to a defined element in an accounting network (Alazard and splitters, 2010), the element being a product or an operation. Another approach relates to cost as the amount of money required in return for goods or services at their acquisition and their fair value corresponds to the moment (Baivert *et al.*, 2007).

In a methodological perspective, the cost can be treated as a grouping and regrouping, according to certain criteria of expenses, combinations are as numerous as in a construction game (Ebbeken *et al.*, 2000). Among the criteria for combining spending are: the place of activity, resources consumed, products and administrative time.

In addition to the mentioned approaches it is necessary to integrate the definition of the concept of cost and value chain which is a tool to identify ways to

create a higher value to the consumer in an entity, concept first made by Michael Porter from Harvard University. The value is obtained by reporting the obtain satisfaction to the product cost.

Romanian authors define cost as an instrument of cost management control, aims to inform decision makers (managers). It allows them to form an opinion on the company overall and also to manage relations with customers through prices. Combined with other tools (budgets, standards etc.), cost information becomes a powerful tool of management control (Ionașcu *et al.*, 2003). The subject of the cost is the ratio formed between the costs incurred by an enterprise in a certain period, on the one hand and economic process that generated those expenses, on the other hand (Căpușneanu, 2008). In terms of content, the expense may not be the object of cost calculation because it is formed within the procurement process (sales), it generates payments and not producing a good occasionally.

The notion of cost is formed within the production process, which leads us to the concept of cost of production is the monetary expression of productive consumptions values performed in order to obtain a product, execution of works, provision of a service at a given time consuming which takes the form of production costs (formed of consuming proper values and of additional expenses (Budugan and Georgescu, 2003). Other authors consider the cost of production to be recognized as cost of product required in evaluating stocks made (Caraiani and Dumitrana, 2005) which consists of direct materials, direct labor, other direct costs and the indirect costs of manufacture.

In making their decisions a decisive role it has the costs because their detailed knowledge leads to providing a sound basis for estimating the efficiency and financial control of the activity. For this process to be achieved under optimal conditions, the decision maker must know in detail issues relating to relevant and irrelevant costs. Most costs affect the image of the entity, its performance, product quality; therefore they present particular importance for managers in decision making. Professor Corina Grosu says it is enlightening that the types of costs determined by management accounting highlights, mainly, the size of cost accounting (Grosu, 2003). The new role of costs in decision-making is to provide an additional advantage in the sphere of decision making based on information relevant to the activity, providing a broad vision of the entity and the timely detection of factors that influence performance.

Cost is a reference indicator of the level of economic efficiency. The adoption of rational decisions that will achieve optimal results must take into account:

- Cost-volume-profit analysis. It is used in establishing the price of products, selecting the mix of manufactured products and intended for sale, the entity's choice of strategy and analysis of the effects of increase or decrease in costs on the profitability of the entity;

- The cost-productivity analysis in the short or long term. In the short term, increased production can be achieved through a combination of variable production factors with constant factors of production. In the short term, the combination of production factors with the constant variable is under the influence of the law of diminishing marginal productivity yields.

The costs that arise are generated in the economic life of any entity, and that economic life is posted between two poles: business and assets (Salva, 2002). The first reports about the emergence of Target Costing method dating from 1930 to Volkswagen, Germany Marks and Spencer in England, but enforcement and systematic development is performed in Japan in the mid-1960s Toyota. Extension of Target Costing method both United States and European level occurs in the late 1980s. Since 2000 the method is studied and applied more extensively across Europe, particularly in France and Britain.

In studies in Germany some authors (Dekker and Smidt, 2003) have demonstrated that the adoption of Target Costing method is related to the intensity of competition and adopting is related to the degree of perception in an uncertain environment. The strongest argument for the adoption of Target Costing method is based on forecasts of customer requirements and market behavior of competitors and the negative

argument is not forthcoming the Target Costing method is based on rigid targets identified forecast customer requirements and the degree of perception in an uncertain environment that suggests the use of the method only as a tool for maintaining competitiveness. Other authors (Hibbets, 2003) believes that Target Costing is a system by which a company is planning in advance to the sales prices, product costs and margins it wants to achieve for a new product. If the company cannot make a product to these levels planned, then canceled entirely through product design. The target cost method, a management team has a strong instrument for continuous monitoring products when they enter the design phase and further along the product life cycle.

While Target Costing objective can be more easily applied at the beginning of the product life cycle, there is no conceptual reason for which the methodology can be applied to existing products. We believe that Target Costing can be also applied in the manufacturing stages of the product life cycle. By restrictive defining of Target Costing method, managers can conclude that this methodology cannot be applied to existing products and can continue with their current systems and inefficient cost management. Other researchers (Horvath *et al.*, 1993) argue that Target Costing method can be applied throughout the product life cycle, including a special project: "Target Costing is only part of the cost management function a product throughout its life cycle. The cost target set to be achieved by meeting customer requirements, using different methods designed to identify potential cost reduction."

3. Methodology of research

3.1. Instrumentation. Data analysis

This study is based on qualitative research because it involves a practical approach of the proposed theme and tries an implementation of relevant principles discussed in the literature.

The work is about the Target Costing method implementation in a construction project in Romania. For achieving the targets we check two hypotheses:

H1. May be implemented Target cost method in a construction project in Romania?

H2. Does contribute target cost method cost to the continuous reduction of costs?

Investigative tools used in scientific management approach was the analysis (evaluation of information, ideas and key concepts recognition, establishing relationships between them) and synthesis (presentation focused, coherent and easily accessible information on the subject studied). Sought investigation objectives involved the preparation of a case study in a construction project in Romania to

achieve the objective pursued, namely the discovery of the benefits and how this method affects the growth performance of the company.

3.2. Stages of Target Costing method

Target cost method focuses on reducing the cost of a product through changes in its design being applied during the design phase of the life cycle of the product. In the literature were identified the following general steps that underlie the Target Costing method (Ansari and Bell, 1997) and were applied as follows:

1. *Driving market research or conducting market research.* Construction Company has conducted a market study on the sale of its services. The design team established a set of service features that customers will most likely and the amount they will pay for these features. The team also considered the impact which has services provided by waiving some features during the project construction. The target price was established by study techniques such as: assessing market needs and competitive analysis. The essence is that the company uses this Target Costing method for their target market pricing based on competitive conditions and prices in the long term they lay down depending on market penetration objectives.

2. *Setting the target profit margin.* Target profit margin has resulted from the strategic and financial objectives of the company in the long-term as a result of efforts in planning a profit. The company offered to the design team a gross margin mandated so that the service offered to win. By lowering gross margin mandated from the price offered service, the team could easily determine the maximum cost target so that the service to reach before being accepted into production. The general equation is as follows:

$$\text{Target price} - \text{Target profit margin} = \text{Target cost (allocated)} \quad (1)$$

Allocated cost is composed of: variable production costs (raw materials, direct wages), unit production costs (development, depreciation, instrumentation), other costs (general manufacturing, administrative) investment costs (inventory, equipment, installation).

3. *Determination of the estimated cost and target cost.* It has been determined the costs of the new service and engineering costs (operating costs, estimated) using the service specifications and existing

manufacturing processes. The general equation is as follows:

$$\text{Target price} - \text{Target profit margin} = \text{Target cost (current cost, estimated cost)} \quad (2)$$

$$\text{Target price} - \text{Target profit margin} = \text{Target cost, estimated (subjected to Kaizen Costing)} \quad (3)$$

Estimated cost was reduced using Kaizen Costing technique for achieving the proposed target cost. Staff of components procurement caused prices based on quality, delivery and quantities required levels waiting for customer service. The engineers had to design service to meet the target cost, which included a number of design iterations to see which combination of features and design considerations resulting revised at the lowest cost.

4. *Calculation of the estimated cost of products and activities expected.* It represents the sum of direct and indirect expenses allocated to the products. Once a design is finalized and approved the service team is reconstituted to include fewer projects and several industrial engineers. The team is now entering a new phase to reduce production costs, which continue throughout the lifetime of the service. These cost reductions underway give additional gross margin sufficient for the company to further reduce price of service in time as response to increased competition.

5. *Calculation of the target cost, the amount of costs to be reduced.* After determining the estimated cost was higher than the target cost proposed by the company, in which we proceeded to reduce it by applying value engineering. This involves adjusting the composition of bottom-up cost estimated, that the indirect costs allocated on cost carrier and that of direct expenditure, where appropriate.

3.3. Applying Target Costing in a construction project

According to the stages of implementation of target costing method in a construction project the following steps were:

A. *Establishing the target price based on the market context and competitive environment.* The target price was established by evaluating market needs and competitive analysis to provide a new service with certain functions or features. From these studies revealed the following target sales prices:

Table 1. Target sales price situation on three years duration

Explanations	Year 2012	Year 2013	Year 2014	Total
Unit sale target price	3280200.00	8421600.00	4902830.86	16604630.86
Target profit margin	148265.04	380656.32	221607.95	750529.31
Unit target cost	3131934.96	8040943.68	4681222.91	15854101.55

B. Establishing the target profit margin. Target profit margin resulted from the strategic and financial objectives of the company in the long-term due

diligence in planning a profit. The resulting profit margin is 4.52% per year.

Table 2. Situation of profit margin

Explanations	Year 2012	Year 2013	Year 2014	Total
Target turnover	3280200.00	8421600.00	4902830.86	16604630.86
Target profit margin	148265.04	380656.32	221607.95	750529.31
Target cost	3131934.96	8040943.68	4681222.91	15854101.55
Share profit margin in turnover	4.52%	4.52%	4.52%	
Share target cost in turnover	95.48	95.48	95.48	

The allocated cost was composed of: variable costs of production, unit production costs, other costs, investment costs (inventory, equipment, installation).

service and engineering costs (operating costs, estimated) using the service specifications and existing manufacturing processes:

C. Determination of the estimated cost and target cost. The following were determined costs of the new

Table 3. Target cost on components of the construction project (year 2012 and year 2013)

No.	Components name	Share in product cost	Target costs on components	Value
01.	General requirements	19%	2965825.01	2965825.01
02.	Location waste deposit	27%	4236930.91	4236930.91
03.	Wastewater collection system	6%	924329.05	924329.05
04.	Landfill gas extraction system	0%	47098.33	47098.33
05.	System for the collection of surface water	5%	722880.17	722880.17
06.	Firefighting system	1%	188962.16	188962.16
07.	Pavement	8%	1299537.41	1299537.41
08.	Recipient	0%	4771.25	4771.25
09.	Planting Landscape	1%	181412.46	181412.46
10.	Fencing fence	0%	56269.72	56269.72
11.	Power supply	3%	542921.55	542921.55
12.	Water supply	1%	150290.36	150290.36
13.	Other structures	1%	98130.05	98130.05
14.	Environmental Monitoring System	1%	194474.81	194474.81
15.	Modular Containers	0%	61326.33	61326.33
16.	Leachate treatment plant	11%	1753146.43	1753146.43
17.	Electrical installations	1%	115615.90	115615.90
18.	Equipment	15%	2310179.66	2310179.66
	Total	100%	15854101.55	15854101.55

3. Calculate the estimated cost of the construction project and expected activities. It was determined by

adding the direct and indirect costs allocated to the construction project.

Table 4. Actual cost (year 2012 and year 2013)/estimated cost (year 2012 and year 2013)

No.	Components name	Actual cost value	Target cost value	Deviation value
01.	General requirements	1951065.09	2076077.51	-125012.42
02.	Location waste deposit	2470901.13	2965851.64	-494950.51
03.	Wastewater collection system	586800.00	647796.22	-60996.22
04.	Landfill gas extraction system	32400.00	32968.83	-568.83
05.	System for the collection of surface water	253038.43	506016.11	-252977.69
06.	Firefighting system	105000.00	132273.51	-27273.51
07.	Pavement	870000.00	909676.18	-39676.18
08.	Recipient	0.00	3339.87	-3339.87
09.	Planting Landscape	0.00	126988.72	-126988.72
10.	Fencing fence	9000.00	39388.81	-30388.81
11.	Power supply	39000.00	381848.59	-342848.59
12.	Water supply	45904.64	105203.25	-59298.61
13.	Other structures	0.00	68691.04	-68691.04
14.	Environmental Monitoring System	0.00	136132.36	-136132.36
15.	Modular Containers	0.00	42928.43	-42928.43
16.	Leachate treatment plant	1192200.00	1297328.36	-105128.36
17.	Electrical installations	46800.00	83243.44	-36443.44
18.	Equipment	1585685.23	1617125.77	-31440.53
	Total	9187794.52	11172878.64	-1985084.12

3.4. Cost control based on target cost method

Deviations provided by Table 4 were made cost control, as the difference between actual cost value and target cost value (only year 2014).

Table 5. Estimated cost for year 2014

No.	Components name	Target costs - year 2014 -
01.	General requirements	889747.51
02.	Location waste deposit	1271079.28
03.	Wastewater collection system	276532.84
04.	Landfill gas extraction system	14129.50
05.	System for the collection of surface water	216864.05
06.	Firefighting system	56688.65
07.	Pavement	389861.22
08.	Recipient	1431.37
09.	Planting Landscape	54423.74
10.	Fencing fence	16880.92
11.	Power supply	161072.96
12.	Water supply	45087.11
13.	Other structures	29439.02
14.	Environmental Monitoring System	58342.44
15.	Modular Containers	18397.90
16.	Leachate treatment plant	455818.07
17.	Electrical installations	32372.45
18.	Equipment	693053.90
	Total	4681222.91

Based on existing information, i.e. big enough difference between target costs and actual costs of investment execution for 2012 and 2013 it can be formulated the following hypothesis: target profit margin

sought to be obtained from this project is too small, resulting a real profit higher than planned or actual costs not fully reflect the physical progress of the work on the ground, i.e., there are unregistered costs on cost

center of the project were misallocated to other cost centers or there exists unregistered costs because of contractors did not issue invoices timely executed works. To clarify the situation created is discussing with site management. Following the confrontation of real

costs recorded in the accounting records of the company with the projected concludes that certain subcontractors have not issued invoices for work performed thus becomes the new situation of real costs:

Table 6. Actual costs/Target costs (year 2012 and year 2013)

No.	Components name	Actual cost	Unregistered costs	Actual cost value	Target cost	Target cost value	Deviation value
01.	General requirements	1951065.09	18994.54	1970059.63	2076077.51	2076077.51	-106017.88
02.	Location waste deposit	2470901.13	0.00	2470901.13	2965851.64	2965851.64	-494950.51
03.	Wastewater collection system	586800.00	0.00	916800.00	647796.22	647796.22	269003.78
04.	Landfill gas extraction system	32400.00	0.00	32400.00	32968.83	32968.83	-568.83
05.	System for the collection of surface water	253038.43	0.00	673038.43	506016.11	506016.11	167022.31
06.	Firefighting system	105000.00	0.00	105000.00	132273.51	132273.51	-27273.51
07.	Pavement	870000.00	0.00	1170000.00	909676.18	909676.18	260323.82
08.	Recipient	0.00	0.00	0.00	3339.87	3339.87	-3339.87
09.	Planting Landscape	0.00	0.00	0.00	126988.72	126988.72	-126988.72
10.	Fencing fence	9000.00	0.00	9000.00	39388.81	39388.81	-30388.81
11.	Power supply	39000.00	0.00	361936.64	381848.59	381848.59	-19911.94
12.	Water supply	45904.64	90000.00	135904.64	105203.25	105203.25	30701.39
13.	Other structures	0.00	36000.00	36000.00	68691.04	68691.04	-32691.04
14.	Environmental Monitoring System	0.00	96000.00	96000.00	136132.36	136132.36	-40132.36
15.	Modular Containers	0.00	0.00	0.00	42928.43	42928.43	-42928.43
16.	Leachate treatment plant	1192200.00	0.00	1552874.29	1297328.36	1297328.36	255545.93
17.	Electrical installations	46800.00	21000.00	67800.00	83243.44	83243.44	-15443.44
18.	Equipment	1585685.23	0.00	1585685.23	1617125.77	1617125.77	-31440.53
	Total	9187794.52	0.00	11183400.00	11172878.64	11172878.64	10521.36

After analyzing Table 6 shows that to be achieved the desired profit margin throughout the project execution year 2014, it will proceed to adjust the target cost.

Table 7. Highlight profit ratio based on actual costs (year 2012 and 2013 execution)

Explanations	Years 2012 and 2013
Real cost	11183400.00
Sale price	11701800.00
Profit	518400.00
Profit margin coefficient	4.43%

Table 8. Highlight profit margin difference (year 2012 and 2013 execution)

Explanations	Years 2012 and 2013
Profit margin	518400.00
Target profit margin	528921.36
The difference between actual profit margin and target profit margin	-10521.36

Table 9. Highlight profit margin target execution year 2014

Explanations	Sum
Total project target profit margin (years 2012, 2013, 2014)	750529.31
The profit margin obtained in 2012 and 2013	518400.00
The difference target profit margin to obtain in Year2014	232129.31

Table 10. Highlight Target Year 2014 execution costs

Explanations	Year 2014
Sale price	4902830.86
Target profit margin	232129.31
Target cost	4670701.55
Share of profit margin in turnover	4.74%

Table 11. Highlight year 2014 target costs (the components)

No.	Components name	Target costs - year 2014 -
01.	General requirements	995765.38
02.	Location waste deposit	1766029.78
03.	Wastewater collection system	7529.05
04.	Landfill gas extraction system	14698.33
05.	System for the collection of surface water	49841.74
06.	Firefighting system	83962.16
07.	Pavement	129537.41
08.	Recipient	4771.25
09.	Planting Landscape	181412.46
10.	Fencing fence	47269.72
11.	Power supply	180984.91
12.	Water supply	14385.71
13.	Other structures	62130.05
14.	Environmental Monitoring System	98474.81
15.	Modular Containers	61326.33
16.	Leachate treatment plant	200272.13
17.	Electrical installations	47815.90
18.	Equipment	724494.43
	Total	4670701.55

4. Conclusions

As a result of steps of the target costing method in a construction project we reached the following conclusions:

1. Target cost method through its phases of general progress can be successfully implemented in a construction project, because by implementing principle its general concurs ultimately by management cost method, namely using the continuous reduction of costs Kaizen Costing method;

2. Help identify deviations and corrective action in every phase or stage of development of a construction project;

3. The information provided by the target cost method helps management in understanding the various aspects of the entity according to changes in the construction market nationally and internationally;

4. Contribute to provide real and precise information needed to entity management decisions on appropriate short and long term.

The benefits of applying target costing method in a construction project also include the following:

- identifying problems in the acquisition, focusing on a wider spectrum of supply;

- improving the understanding of project construction costs by allowing early identification of problems that might occur in the process of reducing costs;

- Focus on end-users of construction projects;

- The cost analysis involves staff from all departments, being encouraged responsibility cost management;

- Carrying out impact assessments on their new construction projects on the market and competitive environment. By considering the full life cycle of the construction project, the total cost of the manufacturer and the customer is significantly reduced;

- Ensure satisfactory financial performance by developing specific goals and real.

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