CONSIDERATIONS REGARDING TERGET COSTING METHOD APPLICATION WITHIN THE ELECTRICAL LIGHTING INDUSTRY

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Abstract: *This article aims to highlight the Target Costing method, and the possibility that it may be used in the electrical lighting industry. The article analyses the Target Costing concept method starting from speciality literature, right since the time of the method so far.By careful examination of the literature it is shown that this method actually is a method of management for economic entities.To correlate the speciality literature, the financial results have chosen as example, by implementing the method of electrical lighting equipment industry within the economic entity Electromax S.R.L. By applying Target Costing method, the company plans in advance the stages of price, cost and product targets which they want to achieve. If a product can not comply with these criteria then the product will be phased out completely. This method is a powerful tool that the management team can use to monitor the products entering the design team and all the product's life cycles. Target Costing method allows planning the cost of products before they are placed into production, which allows products whose margins do not generate profits or generate insufficient profits not to be placed into production. Specifically with Target Costing method, producers will be able to monitor and control the various stages of the product life by analysing its costs from its definition phase, depending on its characteristics and its selling price. Applying the Target Costing method within the economic entities in the industry of electrical lighting, as a method of cost calculation, will help to ensure that new products will be profitable throughout its life cycle, allowing tracking of costs over its lifecycle, comparing them between forecasts and achievements, and reporting to the retail price competition. With Target Costing, the term of the product design will be reduced, the development costs can be lowered and in this way it ensures swift amortisation thereof, allowing for better organisation of relations with the suppliers and customers of the economic entity; providing mobilisation and motivation of all powers within the economic entity, through an approach that allows for greater competitiveness.*

Keywords: *Target-Costing; light fixtures; managerial accounting; profit target.*

JEL classification: *M41.*

1. Introduction:

Leading an entity means, on the one hand, to know thoroughly the current activity and intervening with operational decisions in managing it and on the other hand, foreshadowing future developments and developing forecasts outlining the development goals ahead of that entity**'',**(Briciu S. 2006)

In the market economy, the effectiveness of any economic entities depends essentially on the quality of the management to understand and apply the principles, methods and techniques of modern management. Quality management is an

essential condition for economic entities to obtain competitive advantages and to withstand the competitive mechanism. The previous statement is even more important since in recent years the primary factor for the bankruptcy of a company is the incompetence of the managers and management mistakes caused by errors in decision, (Emil Homormonea, Alexandra Daniela Socea 2011).Nizard considers that “The decision is a conscious action selected from a number of choices, in order to reduce the perceived discontent of a problem. Mintzberg analyses the decision as a process that involves permanently the option to choose.

2. Research methodology:

Research is normally made up of five parts: review of the literature; development of theories; reflection, testing and integration of theories and concepts. Given the theme addressed by us, the research focused on approaching both theoretical and practical approach applied.

In the first phase, the research aimed at presenting a synthesis of existing literature in the field, and we focused on documentary research on the method of Target Costing. Initially, we wanted to address a strictly qualitative research, but we concluded that such research would limit the relevance and the validity setting approaches and research results, so we expanded research methods to the quantitative methods too.

Out off the research methods that we used in this paper, we may include: document analysis, comparative method, observation and case study.

3. Review of the literature

The Target Costing method,(Burrows G., Chenhall R.H. 2012).is a method of pricing based on market enterprises. This is considered as a tool for cost management, reducing total costs of production, whithin all production departments, technical, research and design.Target Costing initial concept began to be presented in Japan in 1960, being used for the first time by the Toyota company,(Tanaka T. 1993).

This concept was developed slowly, because many companies have implemented Target Costing method in response to changes in the external environment. According to this method the cost of the product is, adapted to the price, the latter does not depend on its cost, so it is a modern method of management that uses evolved techniques for market research, value analysis, reducing diversity, and a method of costs calculation.In Japan, the most important event in use of Target Costing method was the economic collapse of 1990 and 1991.After that moment, many companies have realized how difficult it is to meet customer expectations in terms of lower prices. So they updated methodology for Target Costing method by significantly increasing the required data as precise cost estimates, (Kim W., Ansari S., Bell J., Swenson D. 1999). According to the CAM-I deffinition, Target Costing represents ,, *a set of management tools and methods designed to direct the design and planning for new products that provide a base for the subsequent phases of exploitation and ensuring that their products reach their profitability targets throughout their lifetime.* Target Costing method’s stake is in it’s lifetime,*anticipated cost determination is in this respect fundamental, focused in the design stage, for keeping costs under control, even if uncertainties are large, (*Dumitru. M. Calu D. A 2008) the purpose of the target costing method is to identify the cost of production for the desired product, so the sales generate the profit margin desired. Target cost method focuses on reducing the cost of a product through changes in its design,

being applied during the design phase of the product lifecycle (Sorinel Căpșuneanu,Sorin Briciu,2011) *their lifecycle*" CAM-I (Consortium for Advanced Manufacturing- International and SMAC Society of Management Accounting of Canada 1994).

4. **Case study on the Target-Costing method to S.C. Electromax S.R.L**

The initial activity of the entity was the production of lamps for underground mining area. Subsequently, due to the easing of activity in the underground mining industry, the company was reoriented to other areas, being in the position today to manufacture products in areas such as:Lighting for potentially explosive environments;Industrial lighting;Architectural lighting;Commercial lighting;Office lighting;Street lighting;Aviation lighting, comprising: aerodrome, heliport and obstacle lighting;

All these products are made exclusively with LEDs.With extensive experience in the design, manufacture and testing of high intensity LED products.The company has grown steadily, widening its production facilities and the provision with equipment, becoming one of the leading manufacturers of lighting fixtures in Romania, having a significant shift towards research, development and innovation in the production of LED lighting systems. Company's vision is to develop and improve in an innovative and competitive manner, so it can record outstanding achievements in the process of LED lighting, in diverse areas and with many applications. Lighting industry is going through a stage where you need to maintain a balance between energy efficiency, innovation and customer expectations, creating opportunities in the competitive environment.

This leadd to good opportunities in all aspects of the market, creating a healthy business environment. Global market size exceeds 110 billion dollars, following market LED lighting to occupy by 2020, 45%, which is a great outlook for companies that decide to share this market, (http://www.nultylighting.co.uk/wp-content/uploads/2017). SC Electromax SRL 's activity since the early years of the company, was focused on the satisfaction of its customers requirements. The whole range of sold products was set according to customer requirements, the company showing interest in the business for both current customers and potential customers. Regulatory environment (REGULATION(CE)NR.245/2009 from the commission since 18 of March 2009[http://eur-lex.europa.eu//LexUriServ. do?uri=OJ:L:2009), it is translated for Electromax as an opportunity, as LED lighting systems are a viable alternative, in each of the fields for each of the lamps subject to EU regulation (Specifications can be found in the European Commission regulation mentioned above) Existing customers of Electromax SRL is represented by companies from Romania, but also from the European Union countries and also non european .S.C. Electromax SRL applies the method of calculation of orders costs. This is a traditional method being applied by economic entities or individual serial production. To show how to apply the Target Costing method I chose, for example the,, Apollo II " product.

Electromax SRL manufactures the Apollo II product for which the following estimations have been made :

Table 1: Preview of quantity, price, product turnover for Apollo II

Indicators	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020
Conditions forecast	3000	2800	2500	2000	2020
Selling price (lei/piece)	1.002	936	902	668	635
Profit rate	23 %	20 %	17 %	14 %	10 %

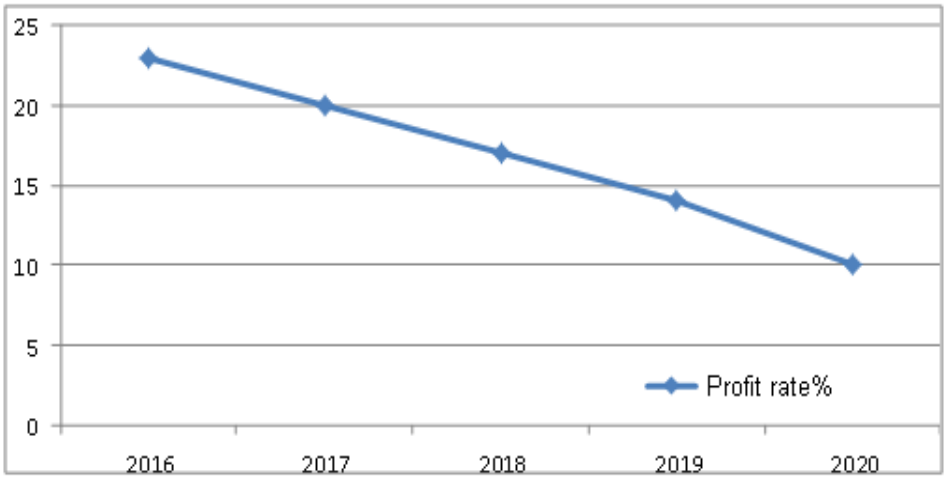


Figure 1: The evolution of the rate of profit
Source: Own processing

The product decomposes in the following components. I only chose components which have the highest significance and for each part of the following, we calculated the costs using a absorber type method.

Table 2: Estimative cost estimation for the parts used to produced one Apollo II

Components	Estimated cost (lei/ piece)
Component 1(Aluminium profile and other materials)	265
Component 2 (Driver IP 65)	235
Total product	500

After the market analysis, Electromax identified three features of the product which are popular among customers and with the following degrees of importance:

Table 3: Identifying Apollo II's appreciated features after market research

Functions	Degree of importance
Design	5
Functionality	20
Resistence	15
Total	40

Electromax's designers determined whether the parts of the product have contributed to its functions as follows:

Table 4: The significance level of the Apollo II components

Components	Design	Functionality	Resistance
Component 1	30 %	90 %	50 %
Component 2	70 %	10 %	50 %
Total product	100 %	100 %	100 %

We determine the target cost of the product and identify the solutions to reduce the level of the target cost. $\overline{pv}$
Determining the average price ( ) during product's selling period (of the targeted cost)

$$\overline{pv} = \frac{\Sigma CA}{\Sigma Q} = \frac{3000 \times 1002 + 2800 \times 936 + 2500 \times 902 + 2000 \times 668 + 1500 \times 635}{3000 + 2800 + 2500 + 2000 + 1500} = \frac{8.170.300}{11.800} = 692,39$$

Table 5: Determination of the margin over the life of the product

Fiscal Value	3.006.000	2.220.800	2.255.000	1.336.000	952.500	8.170 .300
Profit rate	23 %	20 %	17 %	14 %	10 %	
Profit	699.380	524.160	383.350	187.040	95.250	1.881 .180

$$\overline{marja} = = \frac{\Sigma profit}{\Sigma Q} = 159,42 \text{ lei/piece} \frac{1.881.180}{11.800}$$

We determine the average rate of profit ( ) ón product's lifetime:

$$\bar{r} = = X \frac{\Sigma profit}{\Sigma CA} 100 = X\ 100 = 0,23\ X \frac{1.881.180}{8.170.300} 100 = 23\%$$

We determine the weight of the target cost price (% C)
% C = 100 % -23 % = 77 %Target cost calculation:
Target Cost = Targeted selling price - Targeted margin profit

Target Cost = 692,39 -159,42 = 532,97 lei/piece.

Difference = Estimated cost - Target Cost = 500 - 532,97 = 32,97

The difference between the estimated cost and target cost is 32.97 lei, which means that current production costs must be reduced by this amount in order to reach the target cost of 500 lei.

Table 6: Calculation of the share positions in the overall usability of the property.

Functions	**Importance degree**	**Share in percent**
Design	5	(5/40) x 100 = 12,55 %
Functionality	20	(20/40) x 100 = 50 %
Resistance	15	(15/40)x 100 = 37,5 %
Total	40	100 %

Table 7: Determination of the target cost of the product functions

Functions	**Share in the cost of the product**	**Targeted cost per function (lei/ piece)**
Design	12,5 %	66,63
Functionality	50 %	266,48
Resistance	37,5 %	199,86
Total		532,97

Next, we calculate the target cost at the component level, by multiplying the target cost function with the weight of the components of the product. Apollo II contributes to the realization of these functions.

For Part number 1:design 66,63 x 30 % = 19,98 lei; functionality 266,48 x 90 % = 293,83lei; resistance 199,86 x 50 % = 99,93 lei

For Part number 2: design 66,63 x 70 % = 46,64 lei; functionality 266,48 x 10 % = 26,65lei; resistance 199,86 x 50 % = 99,93 lei

Table 8: Calculation of the target cost of the product at the components level

Target Cost (lei/piece)				
Components	**Design**	**Functionality**	**Resrstance**	**Total**
Component 1	19.98	239.83	99.93	354.74
Component 2	46.64	26.66	99.93	173.23
Total	66.82	266.49	199.86	532.87

Calculation of estimated costs deviations from target costs on each product component.

Table 9: Calculation of estimated costs deviations from target costs

Components	Estimated cost(lei/ piece)	Target Cost (lei/ piece)	Deviations (lei/piece)
Component 1	265	359,74	-94,74
Component 2	235	173,23	61,77
Total product	500	532,97	32,97

After the result of the analysis, the target cost for component 1 is above the current cost and the cost for the component 2 is below the estimated cost.
To achieve the target costs, no need to act on the component 1 to reduce the cost thereof.To determine the percentage of importance for each associated component, we proceed to an increased share of each function with the contribution that they bring to achieve each component.So we still calculate the target cost index expressing the relationship between the weight of the components and the share in the costs of the same components .
In order to achieve this index, we follow the next steps :
For component 1: design 12,5 x 30 % = 3,75 %; functionality 50 x 10 % = 45%; resistance 37,5 x 50 % = 18,75%
For component 2: design 12,5 x 70 % = 8,75%; functionality 50 x 10 % = 5%; resistance 37,5 x 50 % =18,75%

Table 10: The percentile importance of Apollo II's components

Component's degree of importance				
Components	**Design**	**Functionality**	**Resistance**	**Total**
Component 1	3,75	45	18,75	67,5%
Component 2	8,75	5	18,75	32,5%
Total product	12,50	50	37,5	100%

Next we proceed to the correlative analysis of the costs and the importance of each component in achieving the percentile functions:

Table 11: Correlative costs analysis and the importance of Apollo II product components

Components	Estimated cost(lei/piece)	Shareof the product' s cost (%)	Component's degree of importance (%)	Target cost indices
Component 1	265	53	65,5	67/53 = 1,26
Component 2	235	47	32,5	32,5/47=0,69
Total	500	100	100	-

The significance of the target cost index can be interpreted in the following way (K.Ebbecen, L. Possler,R.Ristea).

5. Conclusions and research perspectives

Target Costing method involves a significant change in manufacturing of electric lighting equipment, it helps managers and management accountants operate in a competitive business environment, which must accept higher prices compared to previous years. The Electromax SRL Economic entity is directed both to niche markets and to mass markets. *Niche markets are characterised by* specific products: smaller quantities of products; plus great value; volatility in sales; reduced competition; requires expensive certification; requires highly specialised staff; expensive marketing; stock and staff management problems; high delivery deadlines; manufacturing preparation is very expensive.Mass markets are characterised by: production for consumers; big quantities of products; lower capital gains per product; constant sales; does not require special certification; low or average specialisation of staff; higher product stocks; lower marketing costs; possibility for stock sizing ; delivery from stock. In such circumstances, the economic entity, Electromax SRL is affected both by increasing nationally and by increasing worldwide, for which could respond faster to a competitive environment by addressing the benefits of Target Costing method. This method allows obtaining benefits through previous planning costs, and most importantly, accounts management by studying the profitability and financial position on the market. Target Costing method allows cost planning for products before they are placed into production, which allows products whose margins do not generate profits or generate insufficient profits not to enter in the manufacturing phase. Specifically it is the following aspects that we need to consider: pursuit and mastery of different phases of the product life; It allows to analyse costs from the design phase of the product, depending on its characteristics and the selling price; it ensures that new products will be profitable throughout their lifecycle(tracking cost comparison between forecasts and achievements, and reporting to the retail price competition); allows reduction of deadlines for designing new products; allows reducing the development costs, thus, ensures swift amortisation; It allows for better organisation of relations with suppliers and customers of the economic entity; mobilisation and motivation of all powers within the economic entity, through an approach that

encourages greater competitiveness. Given the evolution and prospects of the electric lighting equipment industry, we encourage economic entities in this area to use as a method of costing, the Target Costing method, given the main advantages of the method, namely: focused on customer needs, and allows management targeting an economic entity by integrating the powers of different functions of the economic entity, and a forecast of the effects of the decisions and future results. In conclusion, the Target Costing method creates a strong link between planning, control and current activity of SC Electromax SRL in order to penetrate the market efficiently by using product sales as the main way, complying to the strict specifications, requirements and standards of each product.

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