

PRODUCTION CAPACITY ACCOUNTING - INFORMATIONAL DECISION SUPPORT FOR MEASURING PROFIT IN ALL LUMINAIRE COMPANIES

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Abstract: *The main objectives of this article are to present some theoretical and practical aspects of production capacity accounting in order to optimize profit and to measure the performance of a lighting company. In order to achieve our objective during the work we will try to present a comparative analysis between the production capacity accounting and some methods of managerial accounting, in order to hybridize its advantages and limits in the current context of implementation and optimization of the profit of an economic entity in the production sector of lighting fixtures. Based on the literature there will be presented the evolution of production capacity accounting, of its principles, but also of constraints theory. Comparative analyzes between traditional methods and production capacity accounting are implemented and interpreted. By providing efficient information, the production capacity accounting will have a contribution in substantiating managerial decisions through financial reporting in order to optimize the profit of a lighting company. All the aspects presented are based on the analysis of the literature in the field, and through the contribution of the authors will create a new conceptual and empirical framework meant to be debated in and under another aspect in the academic environment and in other fields of production in all sectors of activity.*

Keywords: profit, revenues, direct costs, traditional accounting, managerial decision, throughput accounting (TA), theory of constraints (TOC).

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Introduction

Of all the decisions that managers face, determining the “correct” level of production capacity is the decision with the most pronounced strategic character, as well as one of the most difficult ones. Thus, if the economic entity has a production capacity greater than the one required to meet the demand, it will incur considerable costs related to unused production capacity. Otherwise, if the production capacity is too low, it risks not being able to honor the orders received from customers. Choosing the level of production capacity used to distribute budgeted fixed production costs on products can greatly affect both the operating profit recorded under a standard calculation system and the information on the costs of the products made available to managers. In economics and accounting, the term production capacity is usually synonymous with "constraint", "upper limit". Theoretical production capacity is the level based on continuous production at maximum efficiency. (Horngren., Datar., Foster., 2006). The historical evolution of production capacity accounting (or throughput accounting - TA) and theory of constraints (TOC) respectively have combined the two notions, thus developing new hypotheses to monitor and measure the performance of economic entities.

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Research methodology

Starting from the historical evolution of production capacity accounting (TA), and theory of constraints (OCD), analyzing the specialized literature we will be able to identify that although the two start from different concepts, the specialists have integrated the two concepts helping managers understand some aspects that were omitted by them in their decision making. Throughout this paper we will try to present the general accounting of traditional costs and their integration with some of the most debated methods of managerial accounting such as: Activity-Based Costing (ABC), Direct-Costing (DC), Six Sigma, Lean Accounting. We will present the opinions of the specialists regarding the viability and the impact of the implications on the manager. During this paper we set out to achieve the following objectives: (1) identifying some aspects related to production capacity accounting (TA) and theory of constraints (OCD); (2) Implementation of integrated systems of production capacity accounting in order to identify the implications they have on the manager.

Literature analysis

Production capacity accounting (TA) is an integrated system, used in management accounting for measuring performance through theory of constraint (TOC) and which provides managers with informational support for decision making, being considered an alternative to cost accounting, production capacity accounting (TA) is based on the identification of limiting factors in order to achieve its objectives (performance).

From the analysis of international literature we find different opinions regarding the emergence and development of the concept of production capacity accounting: that of Galloway and Waldron and that of Goldratt. Waldron (1988) contrasts the fundamental concepts of conventional cost by accounting for "the new principles of production capacity accounting", based on the idea that "Products are not profitable or unprofitable, businesses are" (Waldron, 1988). The conceptual framework of traditional cost accounting defined costs in: direct (variable) and indirect (fixed) costs. The final cost of the product resulted from the summation of all cost components, and the profitability of the product was determined by deducting the costs from the sale price. The stock was considered an asset, and the increase in profit was considered as a reduction of the cost components. The new principles of production capacity accounting no longer distinguish between direct and indirect costs, and the financial gain rate of economic entities is no longer determined by the contribution of each individual product, the inventory is the result of a difference between the supply of raw materials and manufactured products, and profit is a function of material costs, manufacturing costs and production capacity (Waldron, 1988). In other words, all costs are fixed in the short term and what matters is the material resources used to generate sales. The concept of production accounting has been implemented, and the traditional concepts are replaced with the emergence of new production methods JIT, TQM and CIM, the authors replace the notion of operational costs (Goldratt) with the notion of total manufacturing cost (Total Factory Cost), but both notions have the same meaning. The concept and principles of production capacity accounting (TA) appear in some textbooks and are presented, incorporated and promoted by CIMA. Thus, production capacity accounting is defined as: a method of measuring performance that relates to production and other costs of production capacity. Costs of production capacity accounting products refer to the use of key resources by different products (CIMA, 1991; Drury, 1992; Yoshikawa et al., 1993; Bromwich and Bhimani, 1994). One of the latest ways of hybridizing managerial accounting is the ABC and TA / TOC method (Alves and dos Santos, 2005). In the approaches of the specialists the two concepts are somewhat opposed, but studies have shown that there are common points between the two approaches. Thus, some authors have identified a number of successes in adopting and implementing the two approaches: improving the quality of the products in the case of mixed decisions. (Spoede et al., 1994); the integrated mathematical model offered substantially higher incomes than the ABC model and slightly higher incomes than the exclusive OCD-based model (Kee, 1995); the use of OCD for short-term decision making, and ABC for long-term and

Direct-Costing for decision making that are neither short-term nor long-term (Fritzsche, 1997); creating an appropriate environment for continuous process improvement (Gupta et al., 1997); it requires less effort than traditional ABC implementation and provides more information than the standard TOC approach (Demmy and Talbott, 1998); remarkable improvements in the performance of a company after the implementation of TOC (Mabin and Balderstone, 1998); successfully used to increase ABC performance after implementation of TOC (Kaplan, 1989). Other authors and experts have expressed their concerns regarding the combination and implementation of the two approaches, ABC and TA / TOC: when the TOC approach becomes invalid and ABC becomes the correct methodology? (Holmen, 1995); ABC and TOC should be adopted on the basis of the department-department link, where the distinction is made between the department of intensive personnel and the department of intensive machines (Campbell et al., 1997).

Cost analysis as a tool of managerial accounting

Any economic entity will follow the course of its actions so that the effects can exceed the efforts so that the final result obtained is profitable.

"The cost" (M., Ristea, 2000) *"can be considered as any grouping of accounting expenses that is pertinent to affect in order to make decisions in the economic entity, or to ensure the control of a part or the whole of the organization"*. In economic theory the cost is defined as the part of the selling price of an economic good that can offset the expenses that the economic entities make to produce and sell that good, and in the traditional management accounting it is stated that the cost represents the value of labor consumption, alive and material, which is carried out in order to obtain a product, a job or a service at a time and which takes the form of all the production and sales expenses that the entrepreneurs make. If we take into account the provisions of the international accounting references, as well as the OMPF 1826/2003, it is necessary to determine only three categories of costs related to the operating activity of the economic entities, namely: in the phase of supply-purchase costs, and sales. *The characteristics of the concept of cost are: the consumption of resources, the connection with the achievements, the evaluation expressed in money.* The consumption of resources is given by the consumption of all the factors of production: raw materials, materials, labor force, means of production, external benefits, but also other consumption such as taxes and duties due to the state as a result of the activity carried out by the economic entity. The cost bearers who refer to the sale of the products obtained and of the services provided by the economic entity are highlighted in its achievements. The consumption of resources refers to the evaluations in money expression of the economic entity, and this does not have to correspond with the date when the purchase or collection was made. Costs are of particular importance in the specialized literature, which is why we have come to the conclusion that we cannot give an unitary definition of it because its different forms serve the need to inform economic entities in different contexts. Costs are recorded at all levels of organisation of an economic entity, and their measurement, imputation and control are the responsibility of the administrative accounting. In the management of the economic entities, the use of the cost represents an action of first interest in the conditions of the present market economy marked by globalization and with this the competitive growth. The use of cost information is a necessity for management. In order to optimize the links between managerial accounting and entity management, it is necessary for managers to develop their conceptual and methodological competences regarding costs (Sîrbu C., 2008). The cost represents the totality of the expenses incurred for the realization of a product, taking into account all the operations performed from the moment of its entry into the manufacturing process and until delivery to the consumer (Olariu C., 1971). The cost objective is set by the accounting department and the cost allocation mechanism is structured by accumulating the expenses and distributing them on cost objects by establishing the direct costs and allocating the indirect costs. Determining the cost constraints by activity objects is efficient for calculating for each product, service or business partner. From the point of view of the time when a cost is made to reach a goal, it is highlighted as

an expense, having influences on the determination of the financial result in a certain management interval (Bank m.m., 2006). The costs are highlighted only in the production activities, and the expenses are highlighted in all the activities carried out within an economic entity, hence their influence on the cash flows. The cost can also be defined in relation to the sale price, being the lower limit of the price without entering the area of losses (Băluță A.V., 2005). Of particular importance in the analysis and calculation of costs is the classification of costs, which can be made according to several criteria, and which have great utility in the elaboration of decisions related to the production process or for the time period to which it refers. According to the distribution of the cost of products, works or services, the production costs are grouped into direct and indirect expenses (Oprea C., Man M., Nedelcu m.v., 2008). Indirect expenses are detailed in common expenses for production units and general administrative expenses. Direct expenses are the basic expenses because they refer to the main object of activity of the economic entity and can be totally affected without making a preliminary calculation for a product or activity. Variable costs are the costs whose amounts evolve depending on the level of production, for example the raw materials that are part of a product. The costs of the product include the expenses related to the production of goods or the provision of services within the economic entity (consumption of raw materials and materials, expenses with directly productive employees, expenses with depreciation of machinery, etc.). The general administrative costs include the expenses generated by the administrative sector within the economic entity (eg salaries for TESA -technical-economic, social-administration-personnel, depreciation of fixed assets used for administrative purposes, etc.). The general costs of sale include all the expenses related to the distribution, the promotion of a product or service, the transport costs incurred for the purpose of selling the products, etc. Cost division according to cost composition: full cost; variable cost; specific cost; production cost. The complete cost includes both the production costs and the general administration and sales costs, we can say that it meets the classical definition of the concept of cost. The variable cost comprises the total of variable costs in relation to the volume of production, the importance of this cost being given that the selling price of the product must at least cover its expenses.

Traditional cost calculation systems in relation to productivity accounting

Traditional cost calculation methods show that this operation involves technical stages and criteria, aspects related to the technological process and specialized knowledge, i.e. the tools presented in the technological process, namely: raw materials and materials; different criteria for the operation of the machines; the time required to produce a unit of products, etc., they are measured in quantities and use financial-accounting information taken from the balance of verification, but the cost calculation must be done by the technical staff and not by the accounting staff. In other words, the four methods of calculating the costs presented above are not strictly assigned and cannot be considered interdependent with each other.

As concepts of traditional accounting we can describe the following:

- 1) Classify the costs into: direct and indirect;
Direct costs are variable and indirect costs are fixed;
- 2) The total production cost is determined by summing all the costs (direct and indirect);
- 3) The result or profitability of the product is determined as the difference between the income obtained from sales and the total production cost. The inventory is an asset that contributes to the increase of the value of the materials;
- 4) The reduction of the cost components contributes directly to the profit growth.

As concepts of productivity accounting, they are characterized by:

- 1) Do not use the classification of costs into: direct and indirect;
- 2) The profitability of a product is determined by calculating a rate at which the entity earns money, and not the contribution to the profitability of each product;

3) The inventory is not an asset but the result of a desynchronization of the manufacturing process that prevents the profit from being obtained;

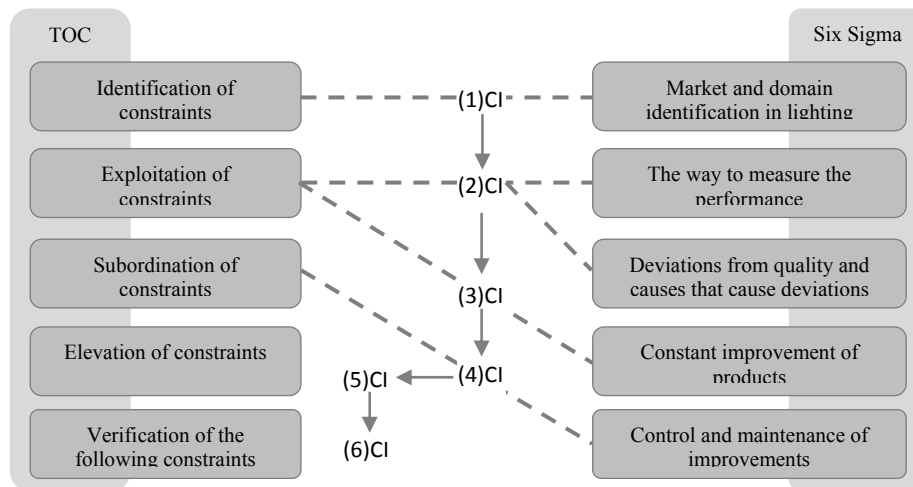
Profit is a function of the cost of materials, the total cost of manufacturing and productivity.

Based on those presented, we find that in traditional cost accounting, direct costs (with labor force) are directly and positively correlated with the production process, considering that each resource has the same quality and ignoring any constraints. TOC focuses on understanding constraints in maximizing profitability and the importance of analysing constrained resources. If the entity's management will take into account the constraints in its decisions, then productivity will increase.

Analysis of managerial implications on the example of a lighting company

Six Sigma is a methodology for improving business processes in which sigma is a statistical measure of process variability. (Breyfogle, 1999). Six Sigma can infuse intellectual capital into a company and produce unprecedented knowledge gains, which would translate into limit results (Kiemele et al., 1997). The implementation of the Six Sigma methodology adopts measures specially designed to continuously improve the production process. It identifies the markets and needs of the silent population; it identifies how performance is measured and their measurement; it analyzes the quality deviations and the variables that generate these deviations; it identifies the causes and modifies the processes that generate them; continuous improvement through control. The main purpose of Lean Accounting is to solve the problems caused by the traditional systems of management accounting and to support the deficient transformations and to favor the efficient strategies (Maskell and Baggaley, 2006). We try to present in Figure no. 1 a combination of the Six Sigma and TOC measures, in order to obtain a much clearer picture of the constraints that impede the obtaining of performances within the economic entities producing electric lighting equipment. Initially, the causes that prevent the improvement of the selected processes will be analyzed. With the identification of the causes with the help of Six Sigma, two methodologies of analysis and measurement will be integrated with the help of which will be able to eliminate the causes necessary for the improvement of the processes: The way of measuring the performances; Deviations from quality and causes that cause deviations. In step 4 it is checked whether the modifications made previously lead to continuous improvement of processes. In step 5 will be considered several variants to increase the process capacity (improvement of manufacturing technologies, outsourcing of components, for example: painting, water cutting, planting LEDs, etc.). In stage 6 the managers will be able to follow more closely the constraints that appear and the continuous improvement of the processes.

Fig. nr.1. Integration of TOC and Six Sigma methods



Source: processing after Ehie I., Şheu C.,(2005)

Six Sigma and TOC integration provide managers with a continuous improvement view, creating the synergy needed for a profitable environment for all parties involved and achieving performance.

ABC and TA/TOC

Modalities of hybridization of managerial accounting have been recorded throughout history, but one of the most recent is the one related to the ABC and TA / TOC method (Alves and dos Santos, 2005). The Activity-Based Costing (ABC) method allocates indirect costs (per activity) to products using cost inducers. The cost of the products is composed of: direct material costs, direct wage costs and a percentage of the indirect costs (by activities). Gross unitary contribution = sales revenue - total costs (materials, salaries, activity costs), and inventory is considered an asset.

TOC / TA- does not use the concept of product cost, production capacity is defined as the price of a unit minus the raw material and other costs that vary for each production unit (for example, performance-related salaries). All costs other than raw material costs and any other costs that vary for a production unit are considered operating expenses. Production capacity per unit of the constraint: the selling price minus the cost of the raw material (or other direct costs), divided by units of the constraint used to produce the product, and inventory is considered a debt related to money.

Lean Accounting and TA/TOC

The calculation of the value flow (value stream costing or VSC Costing) provides information very easy to understand both the management of the economic entity Electromax SRL and its employees by optimizing costs. Cost reduction can have an effect on the activity of the whole company, optimizing its entire activity. We chose to measure the performances according to the principles of Lean Accounting, by means of tools such as: value-cost, value-cost-profit, according to table no.2, and measuring performance according to table no.3:

Table. No.2 Value COST-VALUE-PROFIT Electromax SRL

	Component	Calculation relation	Year 2017	Year 2018	Target
1	Sales		7.192.369,95	7.353.984,94	7.600.000
2	Material costs		3.704.164,60	3.094.254,16	2.694.000

3	Wage costs		731.856,27	1.021.009,00	1.050.000
4	Other equipment expenses		110.469,00	92.893,05	85.000
5	Employment costs		56.045,00	59.259,83	40.000
6	Other operating costs		1.311.504,00	1.796.641,84	1.500.000
7	Total operating costs	$7=(2+3+4+5+6)$	5.914.038,14	6.064.057,92	5.275.000
8	Profit from exploitation	$8=(1-7)$	1.278.331,81	1.289.927,02	2,325.000
9	Percentage of sales	$(8/1)\times 100$	17,77%	17,54%	30,59%

Source: Own calculations adapted after IMA (2006)

Table nr. 3 Performance measurement

	Item description	Calculation relation	Year 2017	Year 2018	Future
Operational					
1	Units per person		13.378	12.271	12.000
2	Single delivery		90%	95%	98%
3	Days doc-to-dock		30	30	15
4	Average production cost		276,88	252,18	224,50
5	Nr. due days		30	25	10
Capacity					
6	Productive		32	30	25
7	Unproductive		10	10	10
8	Available		15	15	10
Financial					
9	Sales		7.192.369,95	7.353.984,94	7.600.000
10	Material costs		3.704.164,60	3.094.254,16	2.649.000
11	Profit flow value	$11=(9-10)$	1.278.331,81	1.289.927,02	2.325.000
12	Profitability of sales	$12=(11/9)\times 100$	17,77%	17,54%	30,59%

Source: Own calculations adapted after IMA (2006)

Analyzing the eight products exemplified by us at the economic entity producing electrical lighting equipment (Electromax SRL), from the six domains of activity: Apolo 2, Galaxy, Apolo EX, Stradal SP, leon, CISA LS IP65, Low Intensity, we can observe that the most profitable products are Galaxy, Leon, Apolo 2, with a total sales weight between 53% and 57%, followed by the CISA LS IP65 product with 45% sales weight, and the street and industrial have a sales weight over 30%, followed by WAGGY (Airfield) with 275, and the lowest weight belongs to LOW Intensity. Regardless of the calculation method applied depending on the production capacity and the variable costs, in our opinion, the problem arises for manufacturing LOW Intensity products, which has the lowest weight in profit.

If we analyze the variable costs according to table no.1, the highest weight, with a percentage of over 10%, belongs to Leon (industrial) product, followed by the street lighting with 8.39%, compared to the other products that have a weight of variable costs between 2.23% and 7%. Taking into account the analysis performed according to table no. 1, the manager of the analyzed economic entity will have to decide on the manufacture of the analyzed products, taking into account the results obtained considering both the variable costs and the production capacity. Also,

following the analyzes performed according to table no. 1 according to the gross contribution, the processing time (TP1 and TP2), we can see that the most profitable are Leon and Apolo EX products, followed by the CISA LS IP 65 product, and equally we find a percentage between 4-5% for Galaxy and Stradal SP products, and the most profitable are the Apolo2 and LOW Intensity products equally. In the case of the most unprofitable products we find them in the street and industrial fields, where the production process differs depending on the technical parameters used in the lighting. Within the economic entity Electromax SRL, chosen by us for an empirical study in the field of electric lighting equipment production, the main objective is to reduce the variable costs, especially the costs with the raw material needed for the production process, but also in the case of standard variable costs. The wage costs are not generally allocated to the products, they are precisely identified between the direct costs and the finished products obtained. The production capacity of Electromax SRL is calculated using the indicator:

$$\text{TA} = \text{Finished product sales revenue} - \text{Total variable costs}$$

Thus, the margin of coverage of the other general and variable costs can be determined. We can conclude that by elaborating an analysis as correct as possible on the highly diversified production activity of the economic entity Electromax SRL, both in the fields of activity and according to the large number of manufactured products, the management is helped to make efficient decisions regarding the multitude of products from accounting and to the production capacity of the economic entity.

Table 1. Indicators calculated by variable cost method and production capacity ELM (Electromax SRL) / 6 fields of activity

	Indicator	Calculation relation	Apolo II	Galaxy	Waggy	Apolo Ex	Stradal SP	Leon	Cisa IP65	Low Intensity
1	Selling price	PV	759,72	362,41	4485,45	1027,72	392,49	182,32	180,94	453,14
2	Total variable costs	CVT	400,07	207,19	1208,53	318,84	131,85	102,25	76,12	69,31
3	Other variable costs	ACV	45,03	20,72	250,00	75,20	35,05	25,70	20,50	10,15
	TOTAL COSTS		445,10	227,91	1458,53	994,04	166,90	127,95	96,62	79,46
4	Gross contribution profile	CB=PV (CVT + ACV)	314,62	134,50	3026,92	33,68	225,59	54,37	84,32	373,68
5	Nr. manufactured products production capacity		1076	288	99	395	731	830	293	1380
6	Position occupied after CB		2	7	8	5	4	3	6	1
7	Position occupied after CB		714,69 3	341,69 6	4235,45 1	952,52 2	357,44 5	156,62 8	160,44 7	442,99 4
8	Weight CVT in PV		53	57	27	31	34	56	42	15
9	Weight ACV in PV		6	6	5,57	7	8,39	14,09	11	2,23
10	Product processing time 1 T_{p1}	(hours / product)	92	45	120	85	180	60	45	70
	Product processing time 2 T_{p2}	(hours / product)	90	40	100	80	160	55	50	75
10.1	TA/ T_{p1}	CB/ T_{p1}	157,31	19,22	378,37	6,73	56,39	18,12	14,05	373,68
10.2	TA/ T_{p2}	CB/ T_{p2}	104,87	22,42	3026,92	16,84	45,12	6,79	12,04	93,42
10.3	TA/ T_{p1}	CB/ T_{p1}	538,00	41,14	12,37	79,00	146,20	276,66	48,83	1380,00
10.4	TA/ T_{p2}	CB/ T_{p2}	358,66	48,00	99,00	197,50	146,20	153,75	41,85	345,00
11	Product placement by	CB/ T_{p1}	3	5	1	8	4	6	7	2
12	Product placement by	CB/ T_{p2}	2	4	1	6	5	8	7	3
13	Product placement by	TA/ T_{p1}	2	6	8	7	4	3	5	1
14	Product placement by	TA/ T_{p2}	2	7	6	3	4	5	8	1

Source: Own calculations

As we can see from the analyzes presented in table 2 and table 3, the information provided to the manager is very easy to understand and effective. This information is provided by the accounting department, especially by the economic director, whose role can be said to have transformed into a management controller. The management controller in this case becomes a manager with a very important role in presenting Lean Accounting. With the help of Lean Accounting, one can monitor the performance of the economic entity within the production of studied luminaires, which leads to a better accuracy of the value flow and profitability of Electromax SRL sales.

It is very important to note that the financial statements represent a much clearer reflection on the performances of the studied economic entity. From the point of view of external reporting, we have tried to analyze the year 2018, according to table no.4, for each of the 12 months, and foresee a near future. Thus, absorption costs are used for the preparation of financial institutions. All costs of manufactured products should be recorded as costs of goods sold (in accordance with US GAAP), and be offset by the proceeds from the sale of finished products when the products are sold. Thus the costs of the products will be recorded and recognized at the time of their manufacture and recognized at the time of their sale. The costs of the period (administrative and sales expenses) will be recognized only when they are incurred, as they do not bring future benefits to the studied economic entity. Analyzing table 4, for each month of 2018 we can see variations in profit between 27.95% in October and 69.97% in August 2018, not forecasting a profit in excess of 60% in the future. The turnover is between 429,023 RON and 816,563 RON in January 2018, forecasting an increase of the turnover to 1,000,000 RON with a return of 60%, due to the sale of the products in the niche fields.

Table no.4. Performance measurement for the year 2018 detailed by 12 months for Electromax SRL

	Item Description / Calculation relation	01/2	02	03	04	05	06	07	08	09	10	11	12	Status viitor
Operational														
1	Units per person	508	1292	856	1004	1357	1503	1605	644	968	1480	881	1187	13.000
2	Single delivery	18%	10%	15%	5%	6%	20%	10%	4%	4%	5%	2%	3%	98%
3	Days doc-to-dock	15	14	13	2	3	15	13	2	2	8	4	4	12
4	Average production cost	138,36	49,41	74,12	24,27	29,66	98,83	49,41	19,76	19,73	24,70	9,88	9,88	484,29
5	Nr. due days	7	6	5	1	2	8	7	1	1	5	3	2	6
Capacity														
6	Productive	45	42	43	45	44	41	45	40	39	41	38	38	50
7	Unproductive	25	22	23	25	24	21	25	20	19	21	18	18	15
8	Available	25	22	23	25	24	21	25	20	20	20	20	20	26
Financial														
9	Sales	816.563	509.517	515.589	625.097	585.372	713.312	664.377	429.023	527.574	681.004	547.362	737.684	1.000.000
10	Material costs	443.231	194.862	218.080	206.567	218.249	240.962	243.980	128.843	227.509	490.653	213.926	444.135	400.000
11	Profit flow value 11=(9-10)	373.332	314.655	297.509	418.530	367.123	472.350	420.397	300.180	300.065	190.351	333.436	293.549	600.000
12	Profitability of sales 12=(11/9)x100	45,72%	61,76%	57,70%	66,95%	62,72%	66,22%	63,28%	69,97%	56,87%	27,95%	60,92%	38,79%	60,00%

Source: Own calculations

Conclusions and perspectives of the research

From the analysis of the studies of the specialists regarding the adoption and implementation of the throughput accounting (TA) they have shown that there are real possibilities of hybridization between the throughput accounting (TA) and the methods discussed in this chapter (Activity-Based Costing, Direct-Costing, Six Sigma, Lean Accounting). The management of companies in the field of the production of electric lighting equipment must take into account these, scientifically well-grounded aspects, which express very clearly their information and decision needs. Throughput accounting (TA) eliminates the dependence on cost accounting standards and constraint accounting (TOC) emphasizes the role of constraint in making managerial decisions. TOC is the alternative to conventional management, with much more obvious arguments, but especially in the lighting equipment manufacturing industry where major changes have occurred due to this market which is governed by the competition laws. TA / TOC changes the perception of managers in relation to the old practices, but also of the personnel that the values in relation to the production represent only the result of a paradigm shift.

Based on those presented above we would like to recommend the following: analysis of the principles and factors TA / TOC, which influence the cost management of the economic entities in the lighting production industry.

Research the literature regarding the chances of successfully adopting and implementing TA / TOC together with other methods of established management accounting, and extending the notions of TA / TOC within this field of activity in order to adopt these systems alongside the other systems of management accounting.

The aspects presented and analyzed represent only a synthesized part of the amount of information processed by the authors, which contributes to the creation of the framework necessary to understand the TA / TOC principles and their application within the companies in the electrical lighting equipment industry, but also the extension within the companies in other fields of activity worldwide. Therefore, new directions of future research are envisaged, such as: the possibility of adapting the TA / TOC principles to other methods of management accounting, but also the results of managerial decisions by implementing the TA / TOC principles, thus having the possibility of completing the decision, based on TA / TOC principles.

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References

1. Alves, J.M. and dos Santos, R.F. (2005). *Activity-Based Costing and Throughput Accounting of TOC: a Hybrid System in the Managerial Accounting*, Proceedings of COBEM 2005, 18th International Congress of Mechanical Engineering, November 6-11, 2005, Ouro Preto.
2. Banc M.M. (2006), *Aspecte delimitativ – metodologice între conceptele de cost și cheltuială*, Oeconomica, nr.8, vol.1 p. 2-6.
3. Băluță, A.V. (2005), *Contabilitate de gestiune*. Noțiuni fundamentale, Ed. Fundației „România de mâine”, București.
4. Breyfogle, F. III (1999), *Implementing Six Sigma: Smarter Solution Using Statistical Methods*, John Wiley & Sons, Inc., New York, NY.
5. Bromwich, M. & Bhimani, A. (1994). *Management Accounting: Pathways to Progress*, London, CIMA.
6. Campbell, R., Brewer, P., and Mills, T. (1997). *Designing an information system using activity-based costing and the theory of constraints*. Journal of Cost Management 11(1), 16-26.

7. CIMA (1991). *Management Accounting: Official Terminology of the CIMA*, London, CIMA/Unwin.
8. Demmy, S., and Talbott, J. (1998). *Improve internal reporting with ABC and TOC*. *Management Accounting (US)* 80, 18-24.
9. Drury, C. (1992). *Management and Cost Accounting*: 3rd Edition, London, Chapman & Hall.
10. Ehie, I. și Sheu, C. (2005). *Integrating six sigma and theory of constraints for continuous improvement: a case study*, *Journal of Manufacturing Technology Management*, Vol. 16 No. 5, 2005, pp. 542-553.
11. Fritzsich, R. B. (1997). *Activity-based costing and the theory of constraints: using time horizons to resolve two alternative concepts of product costs*. *Journal of Applied Business Research* 14(1), 83-89.
12. Holmen, J. S. (1995). *ABC vs TOC: it's a matter of time*. *Management Accounting (US)* January, 37-40 [12]. Horngren C.T., Deter S.M., Forester G., *Contabilitatea Costurilor, o abordare managerială*, Ediția a XI-a, Editura Arc, 2006, p. 336.
13. Galloway, D. & Waldron, D. (1988). 'Throughput Accounting—1: The need for a new language for manufacturing', *Management Accounting*, November, pp. 32–41.
14. Gupta, M., Baxendale, S., and McNamara, K. (1997). *Integrating TOC and ABCM in a health care company*. *Journal of Cost Management* 11(7), 23-33.
15. Kaplan, R. (1989a). *John Deere Component Works. 9-187-107/8., Kanthal. 9-190-002/3* Boston: Harvard Business School.
16. Kee, R. (1995). *Integrating activity-based costing with the theory of constraints to enhance production-related decision-making*. *Accounting Horizons* 9(4) December, 48-61
17. Kiemele, M.J., Schmidt, S.R. and Berdine, R.J. (1997), *Basic Statistical Tool for Continuous Improvement*, Air Academy Press, Colorado Springs, CO.
18. Mabin, V., and Balderstone, S. (1998). *A review of Goldratt's theory of constraints (TOC) – lessons from the international literature*. Presentation at the University of Auckland 16 October 1998.
19. Maskell, B. H., and Baggaley, B. L. (2006), "Lean accounting: what's it all about?", *Target*, Vol. 22, No. 1, pp: 35-43.
20. Olariu C., *Studiu costurilor. Teoria, calculația și informația costurilor*, Editura Didactică și Pedagogică, București, 1971, p.32.
21. Oprea C., Man M., Nedelcu M.V., *Contabilitate managerială*, Editura Didactică și Pedagogică, București, 2008, p.16
22. M.Ristea, L.Possler, K. Ebbeken, *Calculația și managementul costurilor*, Editura Teora , București, 2000.
23. Yoshikawa, T., Innes, J., Mitchell, F. & Tanaka, M. (1993). *Contemporary Cost Management*, London, Chapman & Hall.
24. Sîrbu C., *Strategii de creștere a competitivității bazate pe analiza costurilor*, Editura Europlus, Galați, 2008, p. 93.
25. Spoede, C., Henke, E.O., and Umble, M. (1994). *Using activity analysis to locate profitability drivers*. *Management Accounting (US)* 75(May), 43-48.