ECONOMIC ELEMENTS REGARDING THE STEEL COST PRODUCTION COUNTING

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Abstract
Our article features the elements that make up the cost of production. The economic activity implies a consumption of factors followed-up by products expressed in goods or services. In the first part of the article, we have defined and detailed the cost of production. In the second part we have calculated the cost of the production of one tone of low alloyed steel with vanadium. The prices for the components of cost production have been established within, Tenaris site, located in Calarasi county, Romania.

Key words: *Cost Production Counting; Economic Activity; Steels.*

JEL Classification: *A10; D24; D70*

I. INTRODUCTION

At the end of a business year, many business owners' find often that, in spite of intensive activities, does not record the year with profit or loss concluded. Very often this is due to actual spending without knowing what are work-related. Expenses incurred as a result of industrial units, manufacture and realization of assets are called production cost (Câtu, 1999, Ioana, 2009, Ioana, Mirea and Balescu, 2010).

A calculation of costs is vitally important for any undertaking, since the market price is not guided. That's why every entrepreneur is interested to have a permanent control over the evolution of expenditure and to take all possible measures to reduce it. The price which is to be achieved, include not only the total costs related to the provision of the work, but also a profit enterprise development reliably, intended for (Akman, 2016, Obradovic, 2016, Ioana, 2013, Ioana, Mirea and Balescu, 2009).

In planning and analysis work it is necessary to know the structure of the cost of production, i.e. the components of production and expenditure share for each they meant in total expenditure comprising cost respectively (Ioana and Marinica, 2014, Ioana and Balescu, 2009, Ioana, Constantin and Moldovan, 2015a).

II. COST OF PRODUCTION

Cost of production represents the totality of the expenses with producing of goods or services by an economic unit, amount of money spent for producing a good, performing a service, provisioning of a work, etc., part of the value of production which includes the expenditures for the means of production and wages (Ioana and Semenescu, 2013, Ioana, Semenescu and Preda, 2012).

According to the legal dictionary the cost of production represents the expression in cash for the consumption of production factors necessary for production and sale of material goods and services, materialized in expenses for raw materials, wages, energy, fuel, machine tools, machines, equipment, rent, maintenance, management, administration, etc., supported by the economical agents (Ioana, Constantin and Moldovan, 2015b).

In the specialty documents, the cost of production is considered a synthetic indicator, which characterizes the economic activity along with labor productivity and profitability, efficiency, quality. The cost of production is a major factor for the success of a company; its level must be continuously tracked and analyzed, because it directly affects the selling price and the benefit that it will get. Price represents what it is received through the

sale of a product or provision of a service.

The price is negotiated by seller and buyer, being the money expression of the good value, for the required or payed amount of money. Obviously, the seller will negotiate the price in a such a way that the estimated benefit to be as big as possible, under conditions of fair competitive situations, this containing the product or service in question (Ioana, Semenescu and Preda, 2013, Sukharev, 2015).

In a very broad sense, the benefit or profit may be seen as the achieved gain in monetary form, by those who initiates and organizes an economic activity.

The profit summarizes the results of any profit-making organizations. It is an indicator of economic efficiency, one of the main objectives of companies being obtaining a higher level of profit. The cost production consists from the direct expenditures amount per product and the amount of indirect costs per product:

$$C_{PROD} = \sum Ch_{dir, P} + \sum Ch_{ind, P} \qquad (1)$$

Where:

P = product,

dir = direct

i = direct technological process of production or a stage of the process

ind = indirect

The direct costs represent that category of costs which are identified on the product. They are made up of the sum of expenses for raw materials, energy and labor expenses amount.

$$Ch_{dir, P} = \sum Ch_{mat, m, p,w} + \sum Ch_{labour} \qquad (2)$$

Where:

$Ch_{mat,m,p,w}$ = the costs of raw materials, materials, energy;

Ch_{labour} = the costs of labor.

Indirect costs represent the category of costs that can't be identified on each product, because it is not exactly known their level when it consumes resources in question. They are made up of the sum administrative expenses and the product between the loan rate and the interest rate loan capital.

Example: maintenance costs, section's and company's general costs, sales activity's costs etc.

$$Ch_{ind, P} = \sum Ch_{ADM} + k_i D_{ki} \qquad (3)$$

Where:

Ch_{ADM} = administrative costs

K = rate (share) for the use of borrowed capital,

D_{ki} = related interest on loan capital

Thus, the cost of production is equal to:

$$C_{prod} = \sum Ch_{mat,p,p,v,w} + \sum Ch_{labour} + \sum Ch_{ADM} + k_i D_{ki} \qquad (4)$$

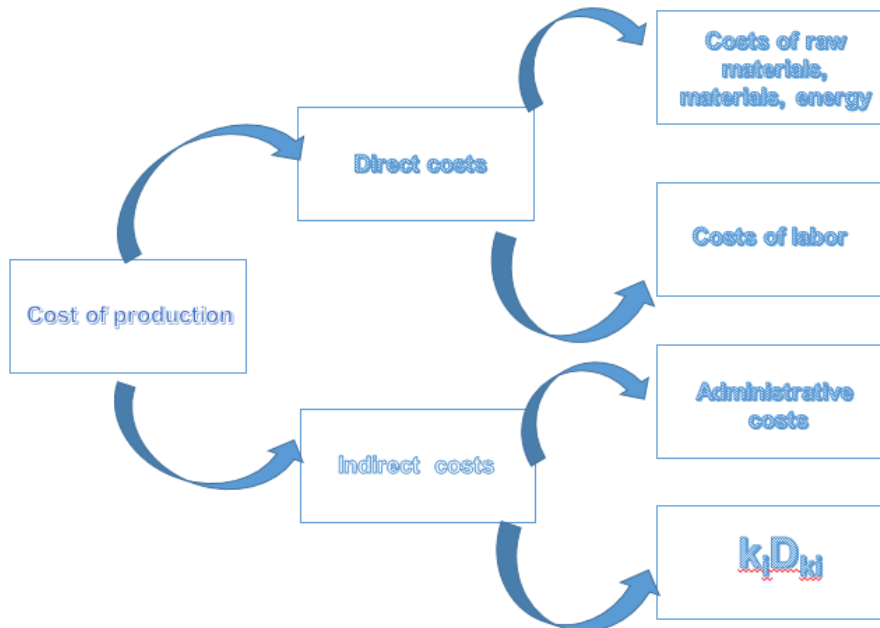In figure 1 we present the production cost diagram.

Figure 1 - The production cost diagram

III. THE PRODUCTION COST CALCULATION OF COST OF PRODUCTION OF A TON OF WEAK STEEL ALLOYED WITH V

Tenaris Silcotub is the leading producer of seamless steel pipes in small diameters which are used in various applications in the mechanical industry, automotive, oil and gas, chemical and petrochemical industry, energy industry. One of the implemented strategies to get the first place in top of everything pipe producers is that their products are made with low production costs.

As stated earlier, the cost of production is the sum of the amount of direct costs per product and sum of indirect costs.

Direct costs are made up by the sum of the amount of raw materials, energy and labor expenses amount.

Indirect costs are made by the amount of administrative costs and the product between the rate of the loan and interest on

The production cost of a ton of weak steel alloyed with V:

$$C_{PROD} = \sum Ch_{mat, m, p,w} + \sum Ch_{manoperă} + \sum Ch_{ADM} + k_i D_{ki}$$

(5)

Table 1 and figure 1 show the components of production cost for this steel.

Tabel 1. The cost of production

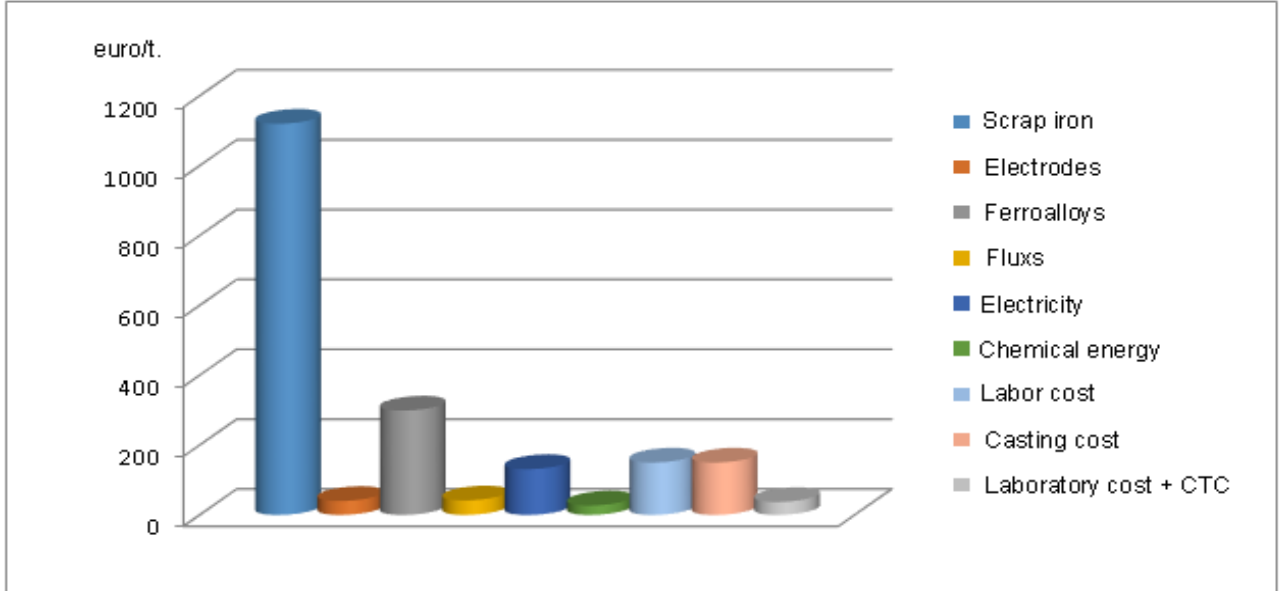|			
Direct costs per product euro/t.	Raw materials	Scrap iron	1120
		Electrodes	40
	Materials	Ferroalloys	299
		Fluxs	41.54
	Energy	Electricity	131.26
		Chemical energy	27
	Labour	Labor cost	150
Indirect costs per product euro/t.	Casting cost	Casting cost	150
	Laboratory cost	Laboratory cost + CTC	37

Figure 2 - The cost of production

IV. CONCLUSION

The cost of production is one of the most important indicators which characterizes the entire synthetic economic activity unit, a basic element of economic efficiency at the level of society. Tenaris Calarasi follows the evolution of these costs, the deviation and identification of costs on the factors of influence on production costs, which ensures the place in top of manufacturers.

Knowing the cost of production has a special importance in the producer's decisions regarding substantiation and reallocations of production, so to maximizing the profits.

By following an untrerrupted economic activity means a continuing consumption of inputs.

By using a quantitative of those inputs, the companies choose the categories and quantities of goods to be produced and optimizes the combination of available factors of production with the objective to maximize the resulting economic benefits. But maximizing profits can be achieved only through cost minimization.

V. REFERENCES

1. Akman, E. (2016) *Impacts of Euro/USD Volatility on Steel Prices of Turkey*, Ecoforum Journal, Vol 5, No 1 /2016, pp. 133-139.
2. Câtu D. (1999) *Contabilitatea de gestiune şi calculaţia costurilor, Caiet de lucrări practice*, Editura Fundaţiei „România de mâine", Bucureşti, pp. 23-29.
3. Obradovic, D., Obradovic, D. (2016) *The Role Innovation on Strategic Orientations and Competitiveness of Enterprises*, Ecoforum Journal, Vol 5, No 1 /2016, 90-95.
4. Ioana, A., (2013) *Metallurgy's Impact on Public Health*, Review of Research and Social Intervention, Vol. 43/2013, ISSN: 1583-3410, eISSN: 1584-5397, (ISI-Web of Social Science/Social Science Citation Index Expanded), WOS: 000328004800011, pp. 169-179.
5. Ioana, A. (2009) *Managementul activităţilor financiar contabile şi analize economice. Teorie şi aplicaţii*, Editura POLITEHNICA PRESS, Bucureşti, pp. 53-142.
6. Ioana, A., Marinică, A. (2014) *Electric Arc Furnace (EAF) – Application In Efficiency of the Energy*, Advances in Energy Research and Development, ISBN 978-0-9895590-1-0, ORIC Publications, Little Rock, Arkansas, USA, pp. 417- 433.
7. Ioana, A., Bălescu, C. (2009) *Environmental Study of the Formation of Evacuated Burnt Gases from a Steels Making Plant*, REVISTA DE CHIMIE Nr.5/2009, [ISSN 0034-7752, ISI-Web of Science/Science Citation Index Expanded], WOS: 000267459400008, pp. 468-471.
8. Ioana, A., Constantin, N., Moldovan, P. (2015) *Constructive and functional modernization of EAF*, IOP Conference Series: Materials Science and Engineering Volume: 85 (International Conference on Applied Sciences - ICAS 2014), doi:10.1088/1757-899X/85/1/012014, pp. 1-6.
9. Ioana, A., Constantin, N., Moldovan, P. (2015) *About EAF and environment*, IOP Conference Series: Materials Science and Engineering Volume: 85 (International Conference on Applied Sciences - ICAS 2014), doi:10.1088/1757-899X/85/1/012014, pp. 7-13.
10. Ioana, A., Mirea, V., Bălescu, C. (2010) *Economic Processes Study through Fuzzy Logic*, Journal of Economic Computation and Economic Cybernetics Studies and Research, no. 2/2010 , [ISSN 0424-267X, ISI-Web of Science/Science Citation Index Expanded], WOS:000278532700009, Academy of Economic Studies Publishing, Bucharest, pp. 129-137.
11. Ioana, A., Mirea, V., Bălescu, C. (2009) *Analysis of Service Quality Management in the Materials Industry Using the BCG Matrix Method*, AMFITEATRU ECONOMIC REVIEW, Vol. XI, Nr. 26, June 2009, [ISSN 1582-9146, ISI-Web of Science/Science Citation Index Expanded], WOS: 000267351800004, pp 270-276.
12. Ioana, A., Semenescu, A. (2013) *Technological, Economic, and Environmental Optimization of Aluminum Recycling*, Journal of the Minerals, Metals & Materials Society, JOM: Volume 65, Issue 8 ISSN 1047-4838 (ISI-Web of Science/Science Citation Index Expanded), WOS: 000322136400007, pp. 951-957.
13. Ioana, A., Semenescu, A., Preda, C. F. (2012) *Management strategic teorie şi aplicaţii*, Editura MATRIX ROM, Bucureşti, pp. 31-78.
14. Ioana, A., Semenescu, A., Preda, C.F. (2013) *Elements of Best Management for Metallurgical Technological Plants*, METALURGIA INTERNATIONAL Volume: 18, Special Issue: 1/2013, ISSN 1582-2214, (ISI-Web of Science/Science Citation Index Expanded), WOS: 000315368200037, pp. 165-167.
15. Sukharev, O.S. (2015) *Institutional Theory of Economic Reforms: Basic Imperatives*, Ecoforum Journal, Vol 4, No 2 /2015, pp. 8-25.