The work volume reflection in the profit's mass

Caruntu, Constantin and Lăpăduşi, Mihaela Loredana
Universitatea Constantin Brâncuşi

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THE WORK VOLUME REFLECTION IN THE PROFIT'S MASS

CĂRUNTU CONSTANTIN, PROF.UNIV.DR.
LĂPĂDUŞI MIHAELA LOREDANA,
ASSISTANT PROFESSOR PHD. STUDENT

"CONSTANTIN BRÂNCUŞI" UNIVERSITY
FACULTY OF ECONOMICS

Abstract:
At microeconomic level, labour productivity is accepted as a possibility of the man power to produce in a certain period of time, a certain amount of goods (to make a certain volume of works or services).
The reflection of work volume in the profit mass provides a company's activity reliability, based on economic rationality.

In limits correlated with the production capacity at a certain moment and with its request, the work volume is taken into account for realizing the dimension of a similar output from a system in first place as a production volume, obviously, bearer of a profit mass. At the product level, the work volume conversion is realized basing on the relation:

$$P = qv \cdot ts \cdot \overline{whs} \cdot pr \tag{1}$$

sau

$$P = Ts \cdot \overline{whs} \cdot pr \qquad or \qquad P = Ts \cdot \frac{P}{Ts} \tag{2}$$

In this case, after the mentioned relations, the work volume conversion in the profit's mass on the product is realized in one of the following variants:

$$\left(qv_1 \cdot ts_1 - qv_0 \cdot ts_0\right) \cdot \overline{whs}_0 \cdot pr_0 \tag{3}$$

$$\left(Ts_1 - Ts_0\right) \cdot \overline{whs}_0 \cdot pr_0 \tag{4}$$

$$\left(Ts_1 - Ts_0\right) \cdot \frac{P_0}{Ts_0} \tag{5}$$

where:

qv – the sold production;
ts - the standard work time per product unit;
$\overline{whs}$ - the production value per standard time unit;
Ts – the standard work time per product;
P – the profit on "x" product;
pr – profit at 1 leu production;

There may also operate with the apotheosis of the sliding conversion for the following period.

For example, taking as a basis the models variables $(Ts_1 - Ts_0) \cdot \overline{whs}_0 \cdot pr_0$, it would mean that in P_{n+1} the profit under the work volume incidence would be:

$$(Ts_{n+1} - Ts_n) \cdot \overline{whs}_n \cdot pr_n \tag{6}$$

We admit as an example:

Table no. 1

Product	Physique volume		Standard time per product unit (hours)		Total standard time (hours)		The value volume (lei)	
	P_{n-1}	P_n	P_{n-1}	P_n	P_{n-1}	P_n	P_{n-1}	P_n
A	2000	2200	100	100	200.000	220.000	200.000	266.400

Table no. 2

The average production per standard time unit (lei)		Profit at 1 leu production		The profit's sum per product (lei)		Deviation of the profit's sum (lei)
P_{n-1}	P_n	P_{n-1}	P_n	P_{n-1}	P_n	
1	1,2	0,10	0,12	20.000	31.968	11.968

In the product profit modification, the work volume has an equal right:

$$\begin{aligned}&(qv_1 \cdot ts_1 - qv_0 \cdot ts_0) \cdot \overline{whs}_0 \cdot pr_0 = \\ &= (2.200 \cdot 100 - 2.000 \cdot 100) \cdot 1 \cdot 0{,}10 = 20.000 \cdot 1 \cdot 0{,}10 = +2.000 \ \ lei\end{aligned} \tag{7}$$

$$(Ts_1 - Ts_0) \cdot \overline{whs}_0 \cdot pr_0 = (220.000 - 200.000) \cdot 1 \cdot 0{,}10 = +2000 \ \ lei \tag{8}$$

$$(Ts_1 - Ts_0) \cdot \frac{P_0}{Ts_0} = (220.000 - 200.000) \cdot \frac{20.000}{200.000} = +2000 \ \ lei \tag{9}$$

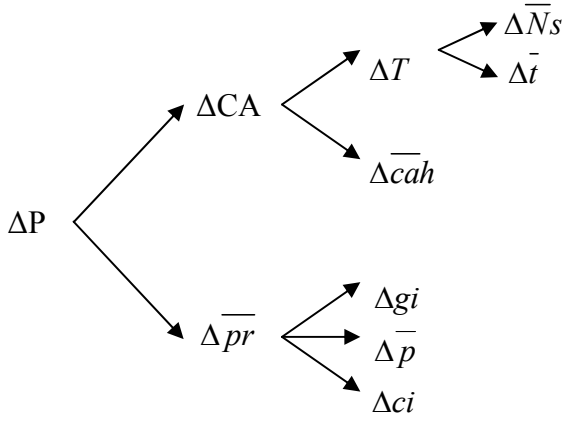
Therefore, from the profit's increase per product "A" 16, 7% is due to the work volume (determined by the production increase).

As it was specified, there may operate also with an estimate conversion for the following period. Appreciating that the necessary work volume to realize a probable production in P_{n+1} would be of 242.000 hours (for the same product "A"), means that in the estimated

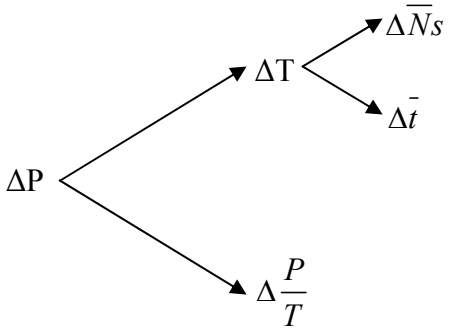
profit in basis of all supposed variables, this would reflect as a premise with: $(242.000-220.000)\cdot 1,2\cdot 0,12=+3.168$ *lei* .

Note: It is not compulsory to imply and raise the work volume if the stipulated volume of production (correlated with the request) may be realized exclusively upon the factors capacity of production. For the entire obtained production and sold (so is taken into account the raising factor "0" of the finite products stocks) operate with the work volume cutting from the factorial complex of analyzing the profit's sum in the specified conditions afferent to the business cipher.

In this sense, for the evaluation of the work volume influence towards P_{n-1} as a comparison basis, synthesizing the personnel number but also the work time utilization, is cut from the models:



Scheme no 1
Reflecting the "work" volume in the afferent profit of the business cipher



Scheme no 2
The work volume reflection in the profit's mass based on the relation no 5

In both situations, the work volume is dimensioned through T which represents a function of the variables $\overline{Ns}$ and $\bar{t}$ (the average employees' number and the average hours number per employee).

To remark only the work volume conversion in comparison with a reference level, we admit $P_{n-1;}$ the information base would be constituted by:

Table no. 3

No. crt.	Indicators	P_{n-1}	P_n
1.	The business cipher (sold production)	1.728.000	2.008.800
2.	Total work time (hours)	1.440.000	1.339.200
3.	Average number of employees	800	720
4.	The average hours number per employee	1800	1860
5.	The average business cipher timetable lei	1,2	1,5
6.	The afferent profit sum to the business cipher	172.800	241.056
7.	The average profit at 1 leu business cipher	0,10	0,12
8.	Profit on time unit	0,12	0,18

After the first model, cutting as it was mentioned only the work volume reflection, results that is of -12.096 lei:

$$\left(T_1 - T_0\right) \cdot \overline{cah}_0 \cdot \overline{pr}_0 = \left(1.339.200 - 1.440.000\right) \cdot 1,2 \cdot 0,10 = -12.096 \ lei \tag{10}$$

of which:

1.Influence of the average number of employees:

$$\left(\overline{N}s_1 - \overline{N}s_0\right) \cdot \bar{t}_0 \cdot \overline{cah}_0 \cdot \overline{pr}_0 = \left(720 - 800\right) \cdot 1800 \cdot 1,2 \cdot 0,10 = -17.280 \ \ lei \tag{11}$$

2.Influence of the average number of hours per employee:

$$\overline{N}s_1 \cdot \left(\bar{t}_1 - \bar{t}_0\right) \cdot \overline{cah}_0 \cdot \overline{pr}_0 = 720 \cdot \left(1.860 - 1.800\right) \cdot 1,2 \cdot 0,10 = +5.184 \ lei \tag{12}$$

Taking into account the scheme no 2, the same influence of the work volume is:

$$\left(T_1 - T_0\right) \cdot \frac{P_0}{T_0} = \left(1.339.200 - 1.440.000\right) \cdot 0,12 = -12.096 \ lei \tag{13}$$

of which:

1. Influence of the average number of employees:

$$\left(\overline{N}s_1 - \overline{N}s_0\right) \cdot \bar{t}_0 \cdot \frac{P}{T} = \left(720 - 800\right) \cdot 1800 \cdot 0,12 = -17.280 \ \ lei \tag{14}$$

2. Influence of the average number of hours per employee:

$$\overline{N}s_1 \cdot \left(\bar{t}_1 - \bar{t}_0\right) \cdot \frac{P}{T} = 720 \cdot \left(1.860 - 1.800\right) \cdot 0,12 = +5.184 \ lei \tag{15}$$

It results that at the sum's increment of the profit afferent to the business cipher, the work volume contributed negatively (taking into consideration its two sides: the average employees number and the average hour number per employee, respectively using the work time). It may be understood that in these conditions the positive deviation of the profit is following the efficiency of production factors, so inclusively the work efficiency. It is retained; however, the unfavorable influence of work volume in its assembly was attenuated by a better usage of time per employee ($\bar{t}_1 \rangle \bar{t}_0$).

The results and conclusion are confirmed upon the estimated profit for a following period it may operate as in the product situation one, the variable values of conversion being those from P_n. For instance, admitting only a raising of the average hour number per employee, therefore a better usage of work time from 1.860 to 1.900 hours, meaning that in the profit grounded by all factors, the work volume equivalent to $720 \cdot 1.900 = 1.368.000$ *ore*, respectively with a raising of 28.800 - hours would reflect (in the conditions given by efficiency) in a profit raising established with the relation:

$$\left(T_{n+1} - T_n\right) \cdot \overline{cah}_n \cdot \overline{pr}_n = \left(1.368.000 - 1.339.200\right) \cdot 1,5 \cdot 0,12 = +5.184\, lei \tag{16}$$

from where an improvement of work time usage, results the relation:

$$\overline{Ns}_{n-1} \cdot \left(\bar{t}_{n+1} - \bar{t}_n\right) \cdot \overline{cah}_n \cdot \overline{pr}_n = 720 \cdot \left(1900 - 1860\right) \cdot 1,5 \cdot 0,12 = +5.184\ lei \tag{17}$$

Obviously, in the given case is not implied the scenario containing all the profit's factors with estimated values for P_{n+1}. In the examination of work volume conversion in the afferent profit of a given period, for example the administration period, it may be pointed out directly only the usage of the work time, therefore taking out its dimension as "total volume" of work from under incidence of personnel number. In such a situation it may be used the relation:

$$\left(T_1 - {}^rT\right) \cdot \overline{cah}_0 \cdot \overline{pr}_0 \ \ sau \ \ \left(T_1 - {}^rT\right) \cdot \frac{P_0}{T_0} \ \ \ unde: {}^rT = \overline{N}_1 \cdot \bar{t}_0 \tag{18}$$

or

$$\left(T_1 - {}^rT\right) \cdot \frac{P_0}{T_0} \ \ \ unde: {}^rT = \overline{N}_1 \cdot \bar{t}_0 \tag{19}$$

Using the case data results: ${}^rT = 720 \cdot 1.800$, and the usage influence upon profit in the administration period is of: $\left(1.339.200 - 1.296.000\right) \cdot 1,2 \cdot 0,10 = +5.184\ lei$ (result similar to that established in base of operations in calculation relations with "$\bar{t}$").

With a complementary side of reflection of the work volume unused until the maximum available level on each administration period is recommended the relation:

$$T_n \cdot \overline{cah}_0 \cdot \overline{pr}_0 \ \ sau \ \ \ T_n = \overline{cah}_1 \cdot \overline{pr}_1 \tag{20}$$

In the dimensioning of unused time is admitted a time of inequality $T_1 \langle T_{\max}$ reflecting the complete non-usage of the maximum available fond determined by objective causes that operate in a certain proportion permanently – for example sick holidays.

It is noticed the fact that work volume determined by a more complete usage of maximum available time may be reflected in profit and also through partial effects contained in the previous models. So, for example, it may point out the work volume influence upon the profit sum and through fixed expenses at 1 leu or 1000 lei business cipher (fixed expenses as part of the total costs). Essential is to operate the work volume

related to its materialization – the production volume. Fir this there may be used two conversion modalities:

1. one bases on time volume in the captious sense respectively to inclusion and personnel number as its variable – conversion is drawn up on the calculation:

$$-\left(\frac{Cf_0}{T_1 \cdot \overline{wh}_0} - \frac{Cf_0}{T_0 \cdot \overline{wh}_0}\right) \cdot CA_1 \quad unde \quad T = \overline{Ns} \cdot \bar{t} \tag{21}$$

2. another using us in each period of unused time in comparison to the maximum one available – we have the relation:

$$-\left[\frac{Cf_0}{\overline{Ns}_1 \cdot (t\max - tn_0)} - \frac{Cf_0}{\overline{Ns}_1 \cdot (t\max - tn_1)}\right] \cdot CA_1 \tag{22}$$

So, excluding the influence of the personnel number and therefore taking into account only the usage of available maximum time, this may mean also through the fixed expenses level a profit of 32.832 lei.

It would be a simplest approach of the work volume reflection in the company's profitability, if this would be limited to the quantitative dimension determined through the work volume and as a last to the efficiency, without a pointing out its quality with larger and complex implications. The explicit part of the work quality is related as effect to the efficacy (productivity) and to the production quality.

In the approaching context, but with the work volume, respectively its conversion in profitability, according our opinion it may be operated with the association of the factor quality (obviously is not about the exactness, we measure the effect).

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