ANALYSIS OF AMORTISATION EXPENSES IN TERMS OF THE EFFICIENCY OF USE OF FIXED TANGIBLE ASSETS, THE COST OF SALE OF BGN 100 AND SALES PROFITABILITY

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Abstract: Fixed tangible assets are one of the key elements of the industrial enterprise's resources. Accounting standard 16 "Fixed Tangible Assets" gives a definition for this type of enterprise's resource. Fixed tangible assets are defined as identifiable non-financial resources acquired and held by the enterprise, which meet the following requirements: they have physical form; they are used for production and/or supply, respectively for sale of assets or services, for lease, for administrative or other purposes; they are expected to be used in the enterprise's activity for more than one reporting period; future economic benefit for the enterprise is expected from their use.
Fixed tangible assets transfer their value into the cost of industrial production by means of amortization. Amortization expenses are recognized as an expense incurred as a result of deferral of the amortized value of the amortized fixed tangible assets during the reporting period.
The amortization attributable to sales of BGN 1 is an important indicator describing the efficiency of the net sales revenue. This indicator is analyzed in two aspects. Firstly, it is analyzed as a separate object of the analysis. From this point of view, two factors affect the dynamics of amortization attributable to sales of BGN 1, and namely: the changes in the turnover rate and the changes in the absorption ratio of fixed tangible assets. Secondly, the amortization attributable to sales of BGN 1 is analyzed as a factor affecting the dynamics of other resultative indicators. The amortization attributable to sales of BGN 1 directly affects the cost of sales of BGN 100. This is due to the fact that the cost of sales of BGN 100 may be represented as a sum of expenses forming the cost of sold products grouped by origin, i.e. by economic items. In its nature, the difference between 100% and the cost of sales of BGN 100 represents the sales profitability. This means that the amortization attributable to sales of BGN 1 also affects the sales profitability, i.e. the profit from sale of products attributable to net sales revenue of BGN 100.
This study highlights the dependence between amortization attributable to sales of BGN 1, the efficiency of use of fixed tangible assets, the cost per sales of BGN 100 and sales profitability.
This study is aimed at developing a theoretically substantiated and practically feasible methodology for analysis of the impact of efficiency of use of fixed tangible assets on cost of sales of BGN 100 and on sales profitability.
Keywords: amortization, profitability, cost of sales of BGN 100, analysis

1. ANALYSIS MODELS

The amount of annual amortization (AA), taking in consideration the movements of fixed tangible assets, can be calculated with the following formula:

$$AM = \frac{A_0 \times A_n}{100} + \frac{A_p \times A_n \times T_p}{100 \times 12} - \frac{A_i \times A_n \times T_i}{100 \times 12}$$

Where:

A_0 - amortized aggregate amount of fixed tangible assets at the beginning of the year;

A_p - amortized aggregate amount of fixed tangible assets acquired during the year;

A_i - amortized value of fixed tangible assets disposed during the current year (whose amortization period has not expired);

A_n - amortization rate;

T_p - number of months during which the acquired fixed tangible assets will be operated;

T_i - number of months during which the disposed fixed tangible assets will not be operated.

The average annual amount of fixed tangible assets ($\overline{DMA}$) by amortised value can be calculated with the following formula:

$$\overline{DMA} = DMA_0 + \frac{DMA_p \times T_p}{12} - \frac{DMA_i \times T_i}{12}$$

Where:
DMA_0 - the amount of fixed tangible assets at the beginning of the year;
DMA_p - the amount of fixed tangible assets acquired during the year;
DMA_i - amount of fixed tangible assets disposed during the year.

The amortization attributable to sales of BGN 1 ($AM^{1ЛB}$) can be calculated with the following formula:

$$AM^{1ЛB} = \frac{AM}{NS}$$

Where:
NS – net amount of sales revenue.

The cost per sales of BGN 100 (S^{100}) are calculated with the following formula:

$$S^{100} = \frac{S \times 100}{NS}$$

Where:
S – cost of sold products.

For the purposes of analysis of cost of sales of BGN 100, the group of expenses forming the cost of sold products is used, depending on their origin.[35] This means that the cost of sold products can be calculated with the following formula:

$$S = MC + AM + CL + OE$$

Where:
MC - expenses for materials;
AM - expenses for amortization;
CL - labour expenses (expenses for social security of staff);
OE - other expenses.

From this point of view, the cost of sales of BGN 100 can be calculated with the following formula:

$$S^{100} = \frac{(MC + AM + CL + OL) \times 100}{NS} = \left(\frac{MC}{NS} + \frac{AM}{NS} + \frac{CL}{NS} + \frac{OE}{NS} \right) \times 100$$

Where:
$\frac{MC}{NS}$ - expenses for materials attributable to sales of BGN 1;

$\frac{AM}{NS}$ - amortization attributable to sales of BGN 1;

$\frac{CL}{NS}$ - labour expenses attributable to sales of BGN 1;

$\frac{OE}{NS}$ - other expenses attributable to sales of BGN 1.

In its turn, the difference between 100 % and the cost of sales of BGN 100 is equal to the profitability of sales, i.e. the profit attributable to net sales revenue of BGN 100.
The amortization attributable to sales of BGN 1 is directly related to the turnover and the efficiency of use of fixed tangible assets.

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[35] Chukov, Kr., Financial and Business Analysis, University Publishing House "Stopanstvo", (2011).

By means of the determined factor modelling method, the dynamics of amortization attributable to sales of BGN 1 can be identified under the effect of the changes in the turnover rate and the efficiency of use of fixed tangible assets.

The turnover rate of fixed tangible assets ($V^{\overline{DMA}}$) can be calculated with the formula:

$$V^{\overline{DMA}} = \frac{AM}{\overline{DMA}}$$

The loading (K^n) and absorption (K^p) ratios characterize the efficiency of use of fixed tangible assets. They are calculated with the following formulae, respectively:

$$K^n = \frac{NS}{\overline{DMA}} \qquad \text{and} \qquad K^p = \frac{\overline{DMA}}{NS}$$

The amortization attributable to sales of BGN 1 may be calculated as follows:

$$AM^{1\text{ЛВ}} = \frac{AM}{NS} = \frac{AM}{\overline{DMA}} \times \frac{\overline{DMA}}{NS}$$

Therefore:

$$AM^{1\text{ЛВ}} = V^{\overline{DMA}} \times K^p$$

We can replace the last formula in the model for analysis of cost of sales of BGN 100:

$$S^{100} = \left(MC^{1\text{ЛВ}} + V^{\overline{DMA}} \times K^p + CL^{1\text{ЛВ}} + OE^{1\text{ЛВ}} \right) \times 100$$

In its nature, this formula is an expanded model for analysis of cost of sales of BGN 100. It shows that the following factors affect the dynamics of the cost of sales of BGN 100:

1) Changes in the expenses for materials attributable to sales of BGN 1 (material consumption of production).
2) Changes in the turnover rate of fixed tangible assets.
3) Changes in the absorption ratio of fixed tangible assets.
4) Changes in the labor expenses attributable to sales of BGN 1.
5) Changes in other expenses attributable to sales of BGN 1.

2. APPROBATION OF THE EXPANDED ANALYSIS MODEL

We will review the methodology for analysis of the cost of sales of BGN 100 in relation to the above factors. The information needed for the analysis, reported by the industrial enterprise Karian OOD, is summarized in table 1.

The data in table 1 show that the cost of sales of BGN 100 for the current year has increased with BGN 16,30 (60,50 – 44,20) or with 36,88% (136,88 – 100) in comparison to the previous year.

The effect of factors on the dynamics of the cost of sales of BGN 100 may be defined according to the method of subsequent replacements. The size and direction of factor influence are summarized in table 2.

The following conclusions may be made based on the information in table 2:

1) As a result of the increase of expenses for materials attributable to sales of BGN 1 (material consumption of products) with BGN 0,10, the cost of sales of BGN 100 has increased with BGN 10,00.

2) Every increase of turnover rate of fixed tangible assets results in increase of amortization attributable to sales of BGN 1, as it increases the amount (amortization) translated into the cost of sales. This means that the cost of sales of BGN has also increased. In the enterprise under review, the increased turnover rate of fixed tangible assets has namely caused the increase in the cost of sales of BGN 100 with BGN 1,20.

Table 1

Indicators	Previous year	Current year	Deviation (+, -)	% of dynamics
Input data, BGN'000:				
1. Average amount of fixed tangible assets	50000	45000	-5000	90,00
2. Amount of annual amortization	9000	9450	450	105,00
3. Net sales revenue	125000	126000	1000	100,80
4. Expenses for materials	25000	37800	12800	151,20
5. Labour expenses	18750	25200	6450	134,40
6. Other expenses	2500	3780	1280	151,20
Additionally calculated indicators:				
7. Cost of sold products, BGN (indicator 2 + indicator 4 + indicator 5 + indicator 6)	55250	76230	20980	137,97
8. Material consumption of products, BGN (indicator 4 : indicator 3)	0,20	0,30	0,10	150,00
9. Turnover rate of fixed tangible assets (indicator 2 : indicator 1)	0,18	0,21	0,03	116,67
10. Absorption ratio of fixed tangible assets, BGN (indicator 1 : indicator 3)	0,40	0,3571	-0,04	89,29
11. Labour expenses attributable to sales of BGN 1, BGN (indicator 5 : indicator 3)	0,15	0,20	0,05	133,33
12. Other expenses attributable to sales of BGN 1, BGN (indicator 6 : indicator 3)	0,02	0,03	0,01	150,00
13. Amortisation attributable to sales of BGN 1, BGN:				
a) model 1 (indicator 2 : indicator 3)	0,0720	0,0750	0,0030	104,1667
b) model 2 (indicator 9 x indicator 10)	0,0720	0,0750	0,0030	104,1667
14. Cost of sales of BGN 100, BGN:				
a) model 1 (indicator 7 : indicator 3) x 100	44,20	60,50	16,30	136,88
b) model 2 (indicator 8 + indicator 9 x indicator 10 + indicator 11 + indicator 12) x 100	44,20	60,50	16,30	136,88
15. Profitability of sales, % (100 - indicator 14)	55,80	39,50	-16,30	70,79

Table 2

Factors affecting the change of cost of sales of BGN 100	Effect, BGN (+)	Effect, BGN (-)
1. Changes in the expenses for materials attributable to sales of BGN 1	10,00	
2. Changes in the turnover rate of fixed tangible assets	1,20	
3. Changes in the absorption ratio of fixed tangible assets		-0,90
4. Changes in the labour expenses attributable to sales of BGN 1	5,00	
5. Changes in other expenses attributable to sales of BGN 1	1,00	
Factors with positive and negative effect	17,20	-0,90
Total effect of factors	**16,30**	

3) The increase of the absorption ration of fixed tangible assets results in increase of the cost of sales of BGN 100. This is due to the fact that the high value of this ratio means that the efficiency of use of fixed tangible assets of the enterprise gets worse. By increasing the efficiency of use of fixed tangible assets (decrease of the absorption ration) we decrease the amortization attributable to sales of BGN 1 and thus the cost of sales of BGN 100. In this particular case, namely the decrease of the absorption ratio of fixed tangible assets with BGN 0,04 has caused the decrease of cost of sales of BGN 100 with BGN 0,90.

4) The increase of labour expenses attributable to sales of BGN 1 with BGN 0,05 has resulted in increase of the cost of sales of BGN 100 with BGN 5,00.

5) As a result of the increase of other expenses attributable to sales of BGN 1 with BGN 0,01, the cost of sales of BGN 100 has increased with BGN 1,00.

We can see that the total effect of factors has changed the cost of sales of BGN 100.

The data in table 1 show that the profitability of sales has decreased with 16,30%, i.e. with a percentage equal to the increase of the cost of sales of BGN 100. The factors affecting the change of cost of sales of BGN 100 also affect the dynamics of sales profitability with the same amount, but with the opposite sign.

3. CONCLUSION

The analysis of the cost of sales of BGN 100 and the profitability of sales is a typical internal analysis. On the basis of the resultative analytical information, the financial management of the enterprise may make appropriate and justified decisions for the successful development of the enterprise in terms of the operational and strategical aspects.

REFERENCES
[1] Chukov, Kr., Financial and Business Analysis, University Publishing House "Stopanstvo", S., page 97-100, 2011.