

FINANCIAL ANALYSIS OF TANGIBLE FIXED ASSETS IN CONDITIONS OF CURRENT SLOVAK BUSINESS ACCOUNTING

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Abstract: A necessary tool for the determination of effective management of tangible fixed assets is their financial analysis. Usage of methodological tools of the analysis depends on the selection of suitable indicators and procedures, which will to a sufficient degree reveal the efficiency of assets usage, or else the fund intensity of production of these assets, but also the correctness of chosen methods for their depreciation and in the first place its function and age structure, which is the basic precondition for creating production conditions. The financial analysis of tangible fixed assets of companies in the Slovak Republic is same as any analysis type significantly affected by accounting data, i.e. the current form of accounting, which forms the basic information source for analyses.

Key words: tangible fixed assets, financial analysis, business accounting, age and function structure of fixed assets, utilization of tangible fixed assets

JEL classification codes: G, M

INTRODUCTION

Financial analysis of tangible fixed assets as an important part of production factor analysis joins the production factor classification in a general economic theory and comprises 3 problem levels:

- Analysis of fixed assets
- Current asset analysis with the emphasis on inventories
- Labor analysis

It supplements the global results of an enterprise with the analysis and evaluation of the problematic areas that influenced their creation by means of inputs. The production factor analysis as well as the global result analysis primarily goes out of the financial accounting records. However, its data basis is much broader; it comprises managerial accounting (including intracompany/internal accounting, budgetary accounting, calculations, operational records, intracompany

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statistics and economic analyses), and information taken from other economic agenda (payroll accounting, stock records), etc.

The range and scope of production input analysis depend on various aspects, e.g. the type of an enterprise, subject of its operations, its size, the level, on which the analysis is carried out (on the global level, on the internal unit level), the period of time, in which it will be used, the subjects that will utilize the results and determinations, etc.

The basis of the analysis of tangible fixed assets is created by these main problem areas:

- Analysis of the function structure and age structure of tangible fixed assets
- Analysis of tangible fixed asset turnover and efficiency of their utilization
- The choice of the tangible fixed asset depreciation methods and their impact on the enterprise economy as a whole (Bartošová, Kicová, 2015)

In this article we will deal with issues representing an advanced tangible fixed asset analysis from these perspectives in conditions of the Slovak enterprises and current state of business accounting.

TANGIBLE FIXED ASSETS FROM THE POINT OF VIEW OF SLOVAK ACCOUNTING AND INCOME TAX LEGISLATION

The content determination of the term *tangible fixed assets* is based on the accounting legal regulation applicable in the Slovak Republic, i.e. the Act on Accounting and the Regulation of the Ministry of Finance of the Slovak Republic for economic entities – businesses using double-entry accounting; the Regulation defines the accounting method details and frame accounting system for subjects using the double-entry method of accounting records. Both directives refer to a specific regulation in particular provisions and it is the Income Tax Act.

As this area is well-known thanks to various theoretical sources we will point out only the basic topics that are the basis for the tangible fixed asset financial-economic analysis in relation to the accounting and tax legislation:

- The content formulation of the terms *long-term assets*, *fixed assets*, *tangible* and *intangible assets* in connection with the legal standards stated above and their current statutory text
- The structure of the long-term assets in the Slovak business accounting
- The criteria for the classification of long-term assets including the exceptions permitted by law (useful life, provision purpose, assessment according to the particular directive)
- Specific status of tangible fixed assets in the structure of assets
- Assessment methodologies for long-term assets

- Economic interpretation of the *depreciation* and *accumulated depreciation* of the assets categories, their presentation in the Slovak balance sheet (Slovak accounting uses the term *depreciation* for both tangible and intangible fixed assets, but in general, in economic theory, tangible assets are expensed using depreciation, and intangible assets are expensed through amortization)
- Legal regulation of financial accounting and tax-oriented depreciation and its current changes (Bartošová, Kicová, 2015).

BASIC INFORMATION AND METHODOLOGY OF THE ANALYSIS

From the point of view of the business and economic theory, the tangible fixed assets include *company fixed production factors that influence the transformation process of the company by means of their actions or static functions, and also: A long-term asset is an asset that will not turn into cash or be consumed within one year of the date shown in the heading of the balance sheet.* The greatest part of the company long-term assets is usually the tangible fixed assets, but it depends on the subject of operations. The basic unit of the tangible fixed assets is called as **the object of tangible fixed assets**. *It is an individual object, a group of objects or a combined technological and structural complex that has its particular operational and technological function and it has an inventory number.* (Belás, J. *et al*, 2014) The tangible fixed assets with similar technical characteristics, time of useful life or other related properties are arranged to homogenous groups that represent the **tangible fixed asset structure**. **The structure analysis of the tangible fixed assets** provides important information for planning its maintenance, determining the number of repairs, amount and focus of investments, utilizing the operation capacity of the enterprise, creating the appropriate specialization and cooperation in production, etc. (Bartošová, Kicová, 2015)

CLASSIFICATION AND ANALYSIS OF THE TANGIBLE FIXED ASSETS

The basis for the **function and age structure** analysis of the company tangible fixed assets is their classification. Several criteria apply to take into consideration individual characteristics and aspects of the long-term asset functions in the transformation process of an enterprise:

1. The tangible fixed assets according to the participation character in the production process are divided into two groups:
 - Productive asset group – it participates in the production process directly or it creates the necessary provision for assuring the failure-free operations of the enterprise,
 - Non-productive asset group – it is used in the sphere of market sale or flows.

2. According to the technological function, the tangible fixed assets are divided into groups and classes:
 - The tangible fixed assets depreciable – they comprise of the following classes in the Slovak accounting evidence: buildings, individual movable assets and their sets, production areas of sustained vegetation, primary herd and draft animals, other fixed assets,
 - The tangible fixed assets non-depreciable, e. g. lands, works of art and their collections.

The classification of the tangible fixed assets according to the technical function allows their subject reproduction and it also respects their division into active and passive asset items. The *active tangible fixed assets* influence the production capacity of the enterprise directly (machines and devices, energetic and power devices, instruments, etc.), the *passive ones* create the environment for smooth operations of the enterprise, for protecting the values (buildings, constructions) and so on. **The proportion between the active and passive tangible fixed assets constitutes their function structure.** (Bartošová, Kicová, 2015)

3. The tangible fixed property used to be comprised of the following items according to its current utilization:
 - In operation
 - Under repair
 - In reserve
 - In conservation
 - Rent to other companies
 - Not used for other reasons (Tokarčíková *et al*, 2014)
4. The age classification of assets – **age structure** – characterizes the level of depreciation of the long-term assets to a certain degree and indirectly also its technical performance. Knowing the age structure is important for the tangible fixed asset reproduction management and investment planning. Shortening/ prolonging the lifetime of these assets is closely related to the severity of the asset repairs and maintenance.

When monitoring and analyzing the age structure, the tangible fixed assets divided into classes (mentioned above) are arranged to separate groups according to their useful life (machines are usually arranged to the age structures in 5-year intervals).

The average age of the tangible fixed assets is calculated on the basis of a relation:

$$\text{average age of tangible fixed assets} = v_1x_1 + v_2x_2 + \dots + v_nx_n = \sum_{i=1}^n v_i x_i \quad (1)$$

where v_jscales – percentage of the tangible fixed assets of certain age in relation to the total number of tangible fixed asset items in the monitored group expressed in decimals

x_jage of the tangible fixed asset items in years

nnumber of tangible fixed asset items in the group

Another relation can be found in a reference literature (Kupkoviè, 2002):

$$\text{average age of tangible fixed assets} = r - \frac{\sum r_j n_j}{n} \quad (2)$$

where ryear, in which we determine the age of the group

r_jyear of manufacture (or acquisition) of a device

n_jnumber of devices manufactured (acquired) in the year r_j

ntotal number of tangible fixed asset items in the group

The economic interpretation is as follows: double value of the average age determines the approximate lifetime of the long-term property. The higher is the average age, when compared to the standardized usefulness of the property, the more problematic its innovation.

ANALYSIS OF TANGIBLE FIXED ASSET DEPRECIATION IN SLOVAK CONDITIONS

In general: The analysis of depreciation and depreciation policy influencing the enterprise economy is connected with the functions that the depreciation fulfills as an accounting and economic category; it is:

- *Calculation function* – depreciation as a part of the operation/product price calculation (an item of the calculation formula)
- *Reproduction function* – depreciation as a source of the fixed asset reproduction
- *Tax function* – taxes depreciation as an expense used to make, assure and sustain the revenue of the company (tax payer) (Bartošová *et al.*, 2014)

Correct determination of depreciation influences the product price and at the same time all relations based on the price. If we use the traditional pricing method based on the calculation formula items, the overestimation of depreciation makes the operation more expensive, i.e. it increases the product price and decreases its competitiveness, when compared to comparable or cheaper products. The underestimation of depreciation can influence the operation price but also formation of resources for the long-term asset reproduction in a negative way. It

means that the enterprise does not generate enough resources to innovate its used-up assets in time. This effect improves the macroeconomic environment – the inflationary development connected with the price level growth or even individual price growth of the selected goods without any connection to inflation.

One of the main criteria for estimating the tangible fixed asset depreciation level is its “wear and tear”. It has a double character:

- Physical wear and tear, active and passive
- Moral (economic) wear and tear

Based on the wear and tear character also the long-term asset lifetime is determined as *physical life cycle – active* – represents the time and intensity of using the long-term property; *passive* – non-productive, it is the result of other influences in time, when the property is not used. *Economic life cycle* reflects the loss of the tangible fixed asset value as the result of technical innovations (labor productivity growth, the price reduction of the long-term property production, the ability to buy more profitable property for the same or lower price; if the inflation growth rate is higher than the labor productivity growth rate, the reproduction costs of acquisition of the tangible fixed property increase.

The relation between the physical and economic life cycle can vary for different asset items: it is negligible for buildings, constructions, etc.; on the other hand, it is significant for the high-tech products and devices with high added value.

TYPES OF DEPRECIATION UNDER THE LAW OF THE SLOVAK REPUBLIC

Slovak enterprises apply in their accounting two basic types of the depreciation:

- *Accounting depreciation* – it is based on the price of the property determined in the accounting system; they are the subject of accounting; they represent the economy of the enterprise; they reflect the actual conditions of using the property and the depreciation policy of the company and they are regulated by the Slovak Act on Accounting.
- *Tax depreciation* – the input price is the price of the property registered in the accounting system or the depreciated price; tax depreciation represents the allowed tax burden; it is calculated at the end of the accounting and income tax period (usually calendar year), the income tax is adjusted by the differences between the accounting and tax depreciation of all fixed assets (+/-).

In the methodology of depreciation analysis there is very important to take into account one characteristics connected with the market economy: **inflation devaluation**. It is expressed in the following mathematic formula: (Bartošová, Kicová, 2015).

$$z = \frac{\sum_{i=1}^n NH_i - \sum_{i=1}^n RH_i}{\sum_{i=1}^n NH_i} \cdot 100 \quad (3)$$

while another formula applies for **the real depreciation value in year j**:

$$RH_j = \frac{NH_j}{\left(1 - \frac{I}{100}\right)^j} \quad (4)$$

where z.....inflation devaluation of depreciation in %

NH_jdepreciation nominal value in year j in €

RH_jdepreciation real value in year j in €

$i = 1, 2, \dots, n$depreciation period in years

Iannual inflation rate in %

ACCOUNTING DEPRECIATION METHODS - FRAMEWORK

The elementary accounting depreciation methods are based on two entities that are related to the fixed property wear and tear. These two entities are **time and performance**. According to them Slovak accounting entities use these methods:

- **Time depreciation methods - constant (linear), variable (non-linear)** - they represent the time function; it is considered as correct to use the time depreciation, when there is an assumption for faster moral wear and tear rather than physical wear and tear as the physical one depends mainly on the usage intensity; then we speak of a performance function.

$$\text{Depreciation rate - Constant depreciations: } O_r = \frac{C_o}{t} \quad (5)$$

where O_rannual depreciation rate in €

C_ofirst cost of the tangible fixed property in €

tstandardized lifetime (depreciation period) in years

Depreciation rate - Variable depreciation: It depends on the selected depreciation technique; basically there are used two main methods in praxis:

- *Progressive depreciation* – the depreciation rate increases during the depreciation period; they are used rarely; their disadvantage is: relatively high depreciated price when the property retirement happens untimely (the arithmetic and progressive depreciation technique);
- *Degrressive depreciation* – the depreciation rate increases during the depreciation period (the arithmetic and degressive depreciation technique, the advantageous accelerated depreciation technique, etc.).
 - **Performance depreciation** – its value depends on the usage intensity of the tangible fixed assets; it is recommended in the cases, when there is an assumption that the reason for the property retirement will be the physical wear and tear, which takes place in a shorter period of time than the moral wear and tear; in praxis, its usage is limited as it is difficult to estimate the total tangible fixed property performance accurately in advance. The formula is as follows: (Kupkoviè, 2002)

$$\text{Depreciation rate – Performance depreciations: } O_j = \frac{C_o}{V} \quad (6)$$

where O_jdepreciation rate per a performance unit in €

C_ofirst cost of the long-term property in €

Vtotal performance during the standardized lifetime in natural units

TAX DEPRECIATION METHODS UNDER SLOVAK TAX LAW

Current Slovak Income Tax Act used these terms and their definitions for tangible (only tangible) fixed asset depreciation: input price, increased depreciated price, depreciation group, depreciation period, accelerated depreciation coefficient. It divides the fixed assets of an enterprise into six depreciation groups (No. 1 – 6) with the depreciation periods 4, 6, 8, 12, 20, and 40 years. Alternative tax depreciation methods and their calculation algorithms: (Paliderová, Bieliková, 2014)

$$\text{Straight-line depreciation: } O_r = \frac{VC}{t} \quad (7)$$

where VCinput price in €

tdepreciation period in years

$$\text{Accelerated depreciation – in 1st year: } O_r = \frac{VC}{k} \quad (8)$$

where k accelerated depreciation coefficient in 1st year

$$\text{in other years: } O_r = \frac{2 \cdot ZC}{k - n} \quad (9)$$

where kaccelerated depreciation coefficient in other years

nnumber of years during which the long-term property has been already depreciated

Current Slovak accounting legislation makes possible to apply accelerated depreciation only in the groups with the depreciation periods 6 and 8 years (electric motors and generators, transformers, turbines, metallurgical equipment and other kinds of technological equipment).

The effect of chosen depreciation method in tax costs is seen from several perspectives in the sphere of financial economy such as incremental analysis in the investment determination, company financial structure optimization, etc.

WEAR AND TEAR LEVEL ANALYSIS

When analyzing the wear and tear level, we take into consideration the real age of a property and the standardized lifetime or the property assessment and its changes caused by the wear and tear (time and value methods).

Tangible fixed property wear and tear level - Time method (through the age):

$$O = \frac{T_s}{T_n} \cdot 100 \quad (10)$$

where Otangible fixed asset wear and tear level in %

T_sreal age of the tangible fixed asset in years

T_nstandardized lifetime of the tangible fixed asset item

Tangible fixed property wear and tear level - Value method (through costs or prices)

$$O = \frac{C_o - C_z}{C_o} \cdot 100 \quad (11)$$

where C_ofirst cost (one type of the historical cost) of the long-term property in €

C_zdepreciated price of the long-term property in €

The difference ($C_o - C_z$) represents the depreciated part of a property (the accumulated depreciation value).

ANALYSIS OF TANGIBLE FIXED ASSET UTILIZATION

The utilization level of the tangible fixed assets is one of the crucial problems of the financial-economic analysis focused on the production inputs. The inevitable requirement for an effective production process is (among others) especially an effective utilization of the active long-term assets. That means: **to obtain the highest business benefit by using the fixed assets in the shortest time**. The tangible fixed asset utilization depends on the following factors:

- **The period of time**, in which the asset is being used '! *extensive (time) utilization*.
- **The performance utilization** of the asset, i.e. it depends on the production volume per a time unit (a machine hour) '! *intensive (performance) utilization*. (Bartošová, Kicová, 2015)

From the quantitative point of view the tangible fixed asset utilization can be expressed by the extensive, intensive and integral utilization coefficients calculated:

- **Extensive utilization:** $K_e = \frac{T_s}{T_p}$ (12) or $K_e = \frac{R_s}{R_p}$ (13)

where K_etangible fixed asset extensive utilization coefficient

T_sactual time usage in time units

T_pplanned time usage in time units

R_sactual number of workers in a shift

R_pnumber of workers in a full shift (planned number)

However, the actual time usage of the tangible fixed assets depends on many other factors such as working mode, repair range, downtime, worker's absence, etc. The improvement of the extensive utilization can be achieved by increasing the number of shifts, free float elimination with the help of the work organization improvement, elimination of the stock limitations, repair organization, work discipline improvement, etc.

- **Intensive utilization:**

where K_itangible fixed asset intensive utilization coefficient

Q_sactual number of products during the monitored period in natural units

Q_pmaximum number of products that can be produced during the monitored period in natural units

The improvement of the tangible fixed asset intensive utilization can be achieved by many processes: the complex automation, technological process development, using of more advanced technique, etc. **The total (integral) tangible**

fixed asset utilization takes into consideration the impact of the extensive and also intensive utilization; it is defined as a K_c coefficient:

$$K_c = K_e \cdot K_i \quad (15)$$

The same symbols used as in the previous formulas.

The tangible fixed asset utilization or restriction by means of aggregation is expressed by *the tangible fixed asset efficiency index*:

$$\acute{u} = \frac{Q}{DM} \quad (16)$$

where \acute{u}tangible fixed asset efficiency coefficient

Qannual production volume expressed in €

DMaverage annual state of tangible fixed assets expressed in €

The index is not only a mathematic expression of the tangible fixed asset efficiency, i.e. asset utilization efficiency related to the production; it reflects also the production and tangible fixed asset changes, cooperation changes, production structure changes, etc. In relation to prices, the value expression of the tangible fixed asset volume in the efficiency index can be a problem. The desired result is the index value stated above.

According to the fixed asset philosophy and construction, its efficiency coefficient belongs to the activity ratio group; it expresses the fixed asset revenue. *The new fixed asset efficiency* is expressed by the production increase related to the asset increase:

$$\Delta \acute{u} = \frac{\Delta Q}{\Delta DM} \quad (17)$$

The reciprocal value of the efficiency index characterizes the *fund intensity of production related to the fixed assets*:

$$f_n = \frac{DM}{Q} \quad (18)$$

It expresses the part of the tangible fixed asset volume (expressed in monetary units, €) that is frozen in assets to reach 1 € production.

There is another fixed asset (long-term capital) utilization index in relation to the company profit; it is *the tangible fixed asset profitability*: (Bartošová et al., 2014)

$$r = \frac{Z}{DHM} \quad (19)$$

where rtangible fixed asset profitability in %

Z(annual) profit in €

DHMaverage annual state of tangible fixed assets in €

Also **the production capacity utilization analysis** plays an important role in the tangible fixed asset analysis; we use the following formula to calculate it:

$$K = V \cdot F \quad (20)$$

where Kfacility production capacity in quantitative units

Vpursuable performance of the facility expressed in quantitative units per a time unit

Freal time activity fund of the facility in a time unit

One of the essential parts of the analysis is the identification and evaluation of the factors that influence the production capacity. In particular, we speak of these factors:

- Human factor – qualified/common labor
- The technical level of the facility
- The quality of material, raw materials and technology level
- Production quality (production of faulty pieces influences the facility performance in a negative way)
- Time capacity and its structure (e.g. repair time) (Kupkoviè, 2002)

CONCLUSION

The financial analysis of the tangible fixed assets (hereinafter as the TFA) constitutes in the environment of Slovak enterprises both a standard part of a complex financial analysis, in our conditions known as the “analysis of company summary results”, and part of a detailed analysis of production inputs – “analysis of company partial results”. The methodology of TFA analysis includes primarily the analysis of TFA’s age and function structure, which are important from the perspective of provision of the production basis of the company and, in this context, of its smooth operation. The analysis of the TFA structure is in the first place based on data from financial bookkeeping and financial statement; detailed analysis is a matter of the management accounting of the company and various components thereof. The accounting legislation in the Slovak Republic, implemented accounting principles, as well as national conventions, affect results of each financial analysis. Preferring

the evaluation of assets at historical costs (which do not take into account inflation fluctuations) plays an important role in Slovak accounting. This fact often leads to distortion of calculated values of indicators, in which TFA and its components are present in monetary units in historical costs (e.g. TFA efficiency indicator or the indicator of TFA production fund intensity). Distortion occurs also in the calculation of TFA profitability. Modifications of this indicator work with various forms of profit, e.g. EBT, EAT, EBIT etc., but especially with TFA reported in various evaluations. TFA is expressed in the financial statement in assets in gross or net prices (after taking into account the wear rate of TFA in form of depreciation), i.e. both the depreciation policy of the state and the TFA depreciation policy adopted in the company by an internal regulation are demonstrated here. In addition, TFA procured by various methods is evaluated in the Slovak bookkeeping of entrepreneurs by means of various evaluation quantities, namely the procurement price (purchased assets), own expenses (assets created by own activity) and actual value – assets acquired free of charge, i.e. through donation or transfer in compliance with legal regulations. These circumstances need to be taken into account in the evaluation of analysis results. Slovak legislation recently cancelled separate reporting of the trading profit/loss from extraordinary activity, which was defined in relation to natural disasters and their economic impacts, whereby costs and incomes of this nature were transferred to the trading profit/loss from economic activity. Depending on the amount of such costs or incomes, the overstatement or understatement of the trading profit/loss occurs to a various degree, according to the evaluation of a certain „business cleverness“, which plays only a minimum role in the case of occurrence of unexpected events. The evaluation of the TFA depreciation impact on the corporate economy has also an important place in the TFA financial analysis and its conclusions. Although shortcomings in the choice of methods and techniques for TFA depreciation and undesirable simplification occur in the practice, it is the practice that confirms the need of a thorough differentiation between accounting and tax depreciations, as well as TFA depreciations in company performance calculations. Accounting depreciation that is governed by accounting legislation of the Slovak Republic offer much wider possibilities for the selection of depreciation method than tax depreciation, where the state has regard only to allowed tax burden. Differing “philosophy” of depreciation is applied in the Slovak Republic in the choice of the amount of depreciation of performance calculation. Contrary to other cost items in the calculation formula, which can be determined e.g. by current market prices, there is a certain tolerance in the case of TFA depreciation, in which the company can operate. The issue of TFA financial analysis is very extensive, especially when we realize what possibilities are offered by e.g. financial accounting. Management accounting offers much larger space for detailed analysis of assets engaged in the company transformation process, whether company-wide or at the level of internal sections.

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