DYNAMIC AND STRUCTURAL ANALYSIS OF TANGIBLE ASSETS

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Abstract
Any company’s economic activity uses material resources in order to achieve the business objective. These consist of two categories of assets: fixed assets, especially the tangible and current assets and their efficient use and operation are some of the most important conditions for the smooth running of the production of a company. Tangible assets constitute the basic assets that any company can use over a period of 1 year and more and contribute to the production of goods, execution of works and provision of services, or they may be used for administrative purposes.

Research and conclusions concerning this issue have resulted in the premises of a successful production activity of the company, in which the role, the importance and the effectiveness of the use of fixed assets will always constitute the basis for obtaining satisfactory performance.

The purpose of this article is the approach and illustration of the use of fixed assets, taking into consideration the following aspects: the structural and the dynamic analysis, as well as the analysis of the influence of the components of fixed assets.

Key words: tangible assets, efficiency, production activity, dynamic analysis, structural analysis

JEL Classification: L2 - Firm Objectives, Organization, and Behavior

1. Introduction and context study

Market economy has required, for more competitiveness, the application of management principles of value creation in enterprises. This involves selecting from a range of possible alternative investments that variant that will most likely generate an increase in the value of the company. One of the most important decisions that management often faces is the acquisition of fixed assets. These are vital prerequisites of a company’s economic activity in conditions of continuity and performance of the economic entity's operations. In order to provide a consistent and complete analysis of fixed assets, one should consider the correlation between all elements of fixed assets that are purchased in order to be used during activities and the expenses incurred for that purpose as well as the resulting effects. [6]


The present research, applied to OMV PETROM SA is directed toward a central basic goal which makes reference to one of the main components of tangible assets, that is asset immobilizations. This objective is divided into the following areas: structural and dynamic analysis of tangible assets, analysis of the influence of these elements, such as: land and buildings, technical installations and machinery, other installations, machineries and furniture, advances, tangible works in execution, real estate investments in progress, tangible assets exploration and evaluation of mineral resources, real estate investments.
Indicators of results (effect) which may be considered closely correlated with the use of fixed assets are given by: production year value (Qex), value added (VA), operational result (RE), the net result for the year (Rnet), turnover (CA). Depending on the specific activity of the company, one can choose between one or more of these indicators in order to express pertinent opinions on the effectiveness of the efficiency of fixed assets.

Indicators of effort are: the average value of fixed assets (Mf), the average active of means (fixed means effectively involved in the activity taken into consideration – Mfa), the amount of any category of fixed assets. Starting from these indicators, the analysis of the efficiency of fixed assets can be done also in comparison with the rate of development of results and the rate of growth of the total value of fixed assets or of categories involved in the production process. If output growth year (or any result directly or indirectly linked to the use of fixed assets) exceeds the dynamics of fixed assets, then: IQe > IMF. This inequality reflects a favorable aspect in terms of efficiency of fixed assets, in the sense that that the “accumulation” of additional value of fixed assets gets to results that “justify” this effort. [7]

The present research, by its results, will contribute to some extent to the development of the theory and practice of economic improvement in terms of the use of assets used, especially fixed assets. This paper will provide a series of theoretical and practical information that provide the ability to supplement the aspects offered by other studies.

2. Theoretical and practical aspects relating to tangible assets

In analyzing the technical potential, the main indicator is the degree of use of production capacity (GUcp), calculated as the ratio between production value (Q) and maximum production capacity (Qmax). This would be used in determining the cost of sub-activity and the cost of not using machineries. [6]

Maximum production capacity is the maximum production that can be obtained within a certain period of time using the designed output and the optimal circumstances for organization of production. [5]

One can delineate three notions regarding production capacity: [3]

• theoretical capacity - represents the maximum volume of finished products on a given period of time, assuming that all machineries and equipment items operate at optimum speed gears without interruption;
• additional capacity - represents the excess equipment and machineries maintained in stand-by status;
• normal capacity - representing the average annual production capacity needed to meet the potential demand for products.

The main features of production capacity, arising from its definition are: the structure of fixed assets, the degree of use of time, return on fixed assets.

The methodology used is one based on a quantitative analysis, and the methodological support will be based on the types of dynamic analysis such as: dynamic, structural and factorial analysis. In addition, the research will be an intensive, one meaning deepening the analysis by means of explanation. The main source which stand as the basis of this research is the balance sheet of OMV PETROM.

The analysis in dynamics of tangible assets constitutes an internal problem of each and every company, and it aims to evidentiate, on the one hand, the materialization of the investment program, and on the other hand, the dynamics and the mass of the resulted effects. In the dynamic analysis, we use the following indicators:

- absolute deviation of tangible assets
  \[ \Delta IC = IC_1 - IC_0 = \pm \text{lei} \]  
- index of tangible assets
  \[ I_{ic} = \frac{IC_0}{IC_0} \times 100 \]  
- growth index of tangible assets
  \[ I_{gc} = \left( \frac{IC_1}{IC_0} \right) - 100 \]  
- the rhythm of growth:
  \[ R_{ic} = \left( \sqrt{\frac{IC_1}{IC_0} - 1} \right) \times 100 \]

Structural analysis of fixed assets enable highlighting of those categories that turned the investment program of the company. Usually, the investment program is geared towards those fixed assets that participate directly and directly to obtain finished products, execution of works, etc.

For structural analysis we use structural coefficient:

\[ G_{ic} = \frac{ic}{IC} \times 100 \]
ic - component element of fixed assets;  
IC - tangible assets (total).

3. Case study on dynamic and structural analysis of tangible assets

To appreciating the fixed assets to OMV PETROM, it is necessary to be considered dynamic analysis and structural analysis. Dynamic analysis of fixed assets to S.C. OMV PETROM S.A. will be achieved on the basis of the data in the table below:

<table>
<thead>
<tr>
<th>Nr. crt.</th>
<th>Indicators</th>
<th>2014</th>
<th>2015</th>
<th>Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Land and construction (LC)</td>
<td>17.281.651.992</td>
<td>16.960.209.724</td>
<td>-321.442.268</td>
</tr>
<tr>
<td>2.</td>
<td>Technical installations and machinery (TIM)</td>
<td>7.062.442.219</td>
<td>6.598.815.795</td>
<td>-463.626.424</td>
</tr>
<tr>
<td>3.</td>
<td>Other installations, machinery and furniture (OIMF)</td>
<td>57.967.959</td>
<td>115.068.629</td>
<td>+57.100.670</td>
</tr>
<tr>
<td>4.</td>
<td>Investment property (IP)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>Tangible assets work in progress (TAWP)</td>
<td>5.141.078.396</td>
<td>3.193.949.995</td>
<td>-1.947.128.401</td>
</tr>
<tr>
<td>6.</td>
<td>Investment property in execution (IPE)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>Tangible assets exploration and evaluation of mineral resources (TAEEMR)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>Advances (A)</td>
<td>46.375.366</td>
<td>232.812.407</td>
<td>+186.437.041</td>
</tr>
<tr>
<td>9.</td>
<td>TOTAL TANGIBLE ASSETS</td>
<td>29.589.515.932</td>
<td>27.100.856.550</td>
<td>-2.488.659.382</td>
</tr>
</tbody>
</table>


Tangible assets evolution is presented schematically as follows:

![Graphical representation of fixed assets and component elements](image)
During the period of analysis 2014-2015, deviation of the tangible assets took the following value:
\[ \Delta TA = TA_{2015} - TA_{2014} = 16.960.209.724 - 17.281.651.992 = -321.442.268 \text{ lei} \] (6)

The influence of each component element of fixed assets shall be submitted as follows:

1. the influence of land and constructions:
\[ LC_{2015} - LC_{2014} = 16.960.209.724 - 17.281.651.992 = -321.442.268 \text{ lei} \] (7)

2. the influence of technical installations and machinery:
\[ TIM_{2015} - TIM_{2014} = 6.598.815.795 - 7.062.442.219 = -463.626.424 \text{ lei} \] (8)

3. the influence of value of the other installations, machinery and furniture:
\[ OIMF_{2015} - OIMF_{2014} = 115.068.629 - 57.967.959 = 57.100.670 \text{ lei} \] (9)

4. the influence of value of the investment property:
\[ IP_{2015} - IP_{2014} = 0 \text{ lei} \] (10)

5. the influence of value of the tangible assets work in progress:
\[ TAWP_{2015} - TAWP_{2014} = 3.193.949.995 - 5.141.078.396 = -1.947.128.401 \text{ lei} \] (11)

6. the influence of value of the investment property in execution:
\[ IPE_{2015} - IPE_{2014} = 0 \text{ lei} \] (12)

7. the influence of value of the tangible assets exploration and evaluation of mineral resources:
\[ TAEEMR_{2015} - TAEEMR_{2014} = 0 \text{ lei} \] (13)

8. the influence of value of the advances:
\[ A_{2015} - A_{2014} = 232.812.407 - 5.141.078.396 = -1.908.265.989 \text{ lei} \] (14)

During the analyzed period, tangible assets recorded an unfavourable evolution in the sense that they have fallen in 2015 compared to 2014 with 2,488,659,382 lei.

At this decrease, the factors with direct influence have contributed as follows:
- the evolution of the land and construction has resulted a decrease of tangible assets value with -321,442,268 lei;
- the evolution of the technical installations and machinery influenced negative the tangible assets value with -463,626,424 lei;
- the evolution of other installations, machinery and furniture have determined the increase of fixed assets value with +57,100,670 lei;
- real estate investments have value zero, so it's not affected in any way the value of the assets;
- tangible asset have determined an decrease of fixed assets value with -1,947,128,401 lei;
- real estate investment work in progress tangible assets and exploration and evaluation of mineral resources have value zero, so have not influenced the tangible assets;
- the value of the advances have had a positive effect on the amount of tangible assets with +186,437,041 lei.

Any enterprise has to steer investment towards tangible used in production process, thus obtaining the increasing of turnover, of exercise production and, last but not least, of profits. In the literature, the tangible structure is known as the technological composition of capital. Tangible structure analysis is performed by using the coefficient of the structure by category of tangible.

Structural analysis method of fixed assets amounted to highlight each component element calculation of the share in the total amount of tangible fixed assets. The method for the application of the method of structural analysis is presented as follows:

- for 2014 we have the following results:
  \[ G_{LC} = \frac{LC}{TA} \times 100 = \frac{17.281.651.992}{29.589.515.932} \times 100 = 58.40\% \] (15)
  \[ G_{TIM} = \frac{TIM}{TA} \times 100 = \frac{7.062.442.219}{29.589.515.932} \times 100 = 23.87\% \] (16)
  \[ G_{OIMF} = \frac{OIMF}{TA} \times 100 = \frac{57.967.959}{29.589.515.932} \times 100 = 0.20\% \] (17)
  \[ G_{IP} = \frac{IP}{TA} \times 100 = \frac{0}{29.589.515.932} \times 100 = 0\% \] (18)
  \[ G_{TAWP} = \frac{TAWP}{TA} \times 100 = \frac{5.141.078.396}{29.589.515.932} \times 100 = 17.37\% \] (19)
  \[ G_{IPE} = \frac{IPE}{TA} \times 100 = \frac{0}{29.589.515.932} \times 100 = 0\% \] (20)
for 2015 we have the following results:

\[ G_{\text{TAEMR}} = \frac{\text{TAEMR}}{\text{TA}} \cdot 100 = \frac{0}{29.589.515.932} \cdot 100 = 0\% \] (21)

\[ G_A = \frac{A}{\text{TA}} \cdot 100 = \frac{46.375.366}{29.589.515.932} \cdot 100 = 0,16\% \] (22)

Structure coefficient (Ks) express the share of each class of tangible fixed assets in total. The values of this ratio over the analysis period is presented in the table below:

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Land and construction (LC)</td>
<td>58,40</td>
<td>62,58</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Technical installations and machinery (TIM)</td>
<td>23,87</td>
<td>24,35</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Other installations, machinery and furniture (OIMF)</td>
<td>0,20</td>
<td>0,42</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Investment property (IP)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Tangible assets work in progress (TAWP)</td>
<td>17,37</td>
<td>11,78</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Investment property in execution (IPE)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Tangible assets exploration and evaluation of mineral resources (TAEMR)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Advances (A)</td>
<td>0,16</td>
<td>0,86</td>
<td></td>
</tr>
</tbody>
</table>

Sursa: own creation based on data from table no. 1

Graphically, the structure of tangible assets shall be submitted as follows:

Graphical representation of tangible assets structure
As a result of the above calculations, it is found that the share of the largest tangible asset headings in a hold land and construction, followed by technical installations and machines, then developing tangible asset headings. The last places are no other plant, machinery and furniture, and advances.

4. Conclusions

Tangible assets are those assets that are used in the production process, in the marketing process or in the provision of services with a long term use, participating in several production cycles and whose value is transmitted gradually as depreciation expenses each financial year.

As a result of the use and exploitation of these assets it is essential to impose a forecast of reducing expenses that will be generated by the involvement of fixed assets in production process. Thus, during the analysis of the effectiveness of expenditure one establishes a series of indicators of material resources that will help constructing a series of comparisons of current results to previous ones.

For a smooth development of economic activities, each company must have some means of production. Some of the basic means of production are fixed assets. Fixed assets of an enterprise are part of the means of production, as expressed by all work means used in economic activity for a long period, keeping the material-original shape and progressively transferring their value upon the newly obtained product. [8]

5. Bibliography