ASSESSMENT OF THE ECONOMIC EFFICIENCY OF THE INTANGIBLE ELEMENTS OF THE ENTREPRISE PATRIMONY

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Abstract
The practical assessment of the intellectual property is a complex and difficult issue due to the myriads of factors influencing it, and to the fact that the methodologies applied differ from one country to another, from one continent to another. Therefore, the responsibility of those who carry out transactions with these intangible assets is maximum, as they also have social and/or political implications.

The classical methods for appraising the intellectual property are the same as those used for assessing the intangible assets.

Keywords: innovation, progress, assessment, intellectual property, intangible assets

JEL Classification: O 16; O 32

The complex method of assessing a company’s assets enters both the size of tangible assets and the value of intangible assets into the total value.

In the accounting records of an enterprise, the intellectual property is included in the intangible assets group, along with the rights, relationships
and other intangibles grouped in Class 2 - cost of fixed assets.\footnote{Faighenov, M., Evaluation of intellectual property - the economic and accounting issues, Invention and Economics, second year, no. 5 (17), May 1998, pp. 11-15.}

In the industrial or commercial environment, over 100 intangible assets can be identified:

- **technical competence** (documentation, studies, licenses, patents, know-how and other objects of industrial property, copyright, computer programs, libraries, databases, quality assurance systems, qualification of personnel etc.); \footnote{Faighenov, M., Criteria and assessment methods, Invention and Economics, second year, no. 6 (18), June 1998, pp. 29-33.}
- **commercial competence** (promotion through advertising, good customer service, distribution etc.);
- **managerial competence** (quality of products, key managers, managerial performances etc.);
- **reputation** (the reputation of the company);
- **Site**;
- **customers**;
- **creditworthiness and solvency** to customers and banks;
- **position** to administrative and public bodies.

The practical assessment of the intellectual property is a complex and difficult issue due to the myriads of factors influencing it, and to the fact that the methodologies applied differ from one country to another, from one continent to another. Therefore, the responsibility of those who carry out transactions with these intangible assets is maximum, as they also have social and/or political implications.

Mainly, the assessment of intangible assets can be performed by:

- evaluating a set of intangible elements as part of the company’s assessment (Good Will);
- evaluating a single intangible element (or set) separately and independently.

The classical methods for appraising the intellectual property are the same as those used for assessing the intangible assets, i.e. methods based on market comparisons, methods based on income, profits or turnover (net cash flow method; royalty rate method fee) cost-based methods (legal analysis, technical analysis, business analysis, social analysis), methods based on the recovery period.

After completing an assessment for intellectual property objects, it is advisable that a review of the correctness or susceptibility of this operation be undertaken.

The assessment of an intangible asset is approached with the help of the following groups of evaluation methods:

- future net income capitalization method;
- cost method;
- comparison of market value method;
- other methods.

Evaluation is a complex process that is not confined to the use of evaluation methods groups. Evaluation should take into account the basic principles of each evaluation method, as well as the experience of firms specializing in this type of evaluation.

The assessment of intangible assets can be performed by considering a set of intangible elements as part of the company or by assessing a single intangible item separately from the company.

The intangible elements are numerous and can be identified in the industrial and/or commercial environment (Table 1) by means of different characteristics.

Once identified, intangible elements can be classified in various ways.
**Table 1. Frequent intangibles in the presentation of the assessment activity**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of intangible assets</th>
<th>No. Name of intangible assets</th>
<th>No. Name of intangible assets</th>
<th>No. Name of intangible assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Advertising campaigns and programs</td>
<td>Goodwill</td>
<td>Folders with medical prescriptions</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Agreements</td>
<td>Government Contracts</td>
<td>Awards</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Airport gates and openings</td>
<td>Government programs</td>
<td>Procedure Manuals</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Plant assessments</td>
<td>Government records</td>
<td>Competition Portfolio</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Legal judgments and sentences</td>
<td>Historical Documents</td>
<td>Product design</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bank customers - deposits, loans and credit card obligation</td>
<td>HMO promotion list</td>
<td>Right to make use of property/ownership</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Projects</td>
<td>Expired insurance policies</td>
<td>Outstanding proposals</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Libraries</td>
<td>Insurance policies in force</td>
<td>Proprietary software policies</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Brands</td>
<td>Associations</td>
<td>Proprietary processes</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>RTV broadcasting Claims</td>
<td>Know-How</td>
<td>Proprietary Products</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Purchase agreements</td>
<td>Laboratory notebooks</td>
<td>Patented technology</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>References</td>
<td>Landing rights</td>
<td>Publications</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Chemical formulas</td>
<td>Leased Properties</td>
<td>Purchase orders</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Claims</td>
<td>Interest in leased</td>
<td>Subject to approval properties</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Software</td>
<td>Literary works</td>
<td>Reputation</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Computerized databases</td>
<td>Issue bonuses and compensation</td>
<td>Retail space</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Contracts</td>
<td>Loan Portfolio</td>
<td>License Agreements</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Cooperation agreements</td>
<td>Location value</td>
<td>Charts and diagrams</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Copyright</td>
<td>Management Contracts</td>
<td>Equity portfolios</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Credit information files</td>
<td>Database manual</td>
<td>Stocks in stake</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Contracts with customers</td>
<td>Manuscripts</td>
<td>Agreements between shareholders</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Lists of customers</td>
<td>Promotional marketing materials</td>
<td>100 Legal rights</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Customer relations</td>
<td>Masks and molds</td>
<td>Shares and bonds</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Designs</td>
<td>Medical charts and files</td>
<td>Subscription lists</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Development Rights</td>
<td>Rights to mineral resources</td>
<td>Supply contracts</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Distribution network</td>
<td>Musical composition</td>
<td>Technical and specialized libraries</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Distribution Rights</td>
<td>Natural Resources</td>
<td>105 Technical Documentation</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Drilling Rights</td>
<td>Newspaper Archives</td>
<td>106 Technology</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Facility</td>
<td>Non-compete agreements</td>
<td>107 Technology-sharing agreements</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Employment contracts</td>
<td>Unabated arrangements</td>
<td>108 Pure plant varieties</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Technical Documentation</td>
<td>Open orders</td>
<td>109 Trade secrets</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Rights on the surrounding environment</td>
<td>Options, warrants, grants, rights</td>
<td>Trained and organized labor</td>
<td></td>
</tr>
</tbody>
</table>

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3 Faighenov, M., Criteria and assessment methods, Invention and Economics, second year, no. 6 (18), June 1998, pp. 29-33.
A. Methods for the assessment of intangible assets

- The Net Income Capitalization Method consists in establishing the economic net income. This income can be of cash-flow type achievable throughout the remaining lifetime of the intangible asset, of over-profit type or net royalty type.

- Cost method

  This method implies the establishment of the production cost under certain circumstances and it estimates the value of an element which can be used on the replacement principle, according to the following relations:

  \[ C_{\text{in}} = C_r - (U_{zf} + U_{zt}) \]

  in which \( C \) stands for the replacement cost new; \( C \) for the reproduction cost; \( U \) for the functional wear and \( U_{zt} \) for the technological wear.

  \[ V = C_{\text{in}} - (D_f + U_{ze}) - U_{zeh}, \]

  in which: \( V \) stands for the value; \( D_f \) for physical deterioration; \( U_{ze} \) for economic wear; \( U_{zeh} \) for the recoverable functional and technological wear.

- The replacement cost new establishes the maximum price which a cautious investor will pay for an intangible asset. If the existing intangible asset is less useful than an ideal replacement, the necessary adjustments will be performed as to:

  - physical deterioration;
  - functional wear;
  - technological wear;
  - economic wear.

  The recoverable deficiencies of an intangible asset appear when the forecast profit after their removal exceed the replacement costs (in terms of materials, labor and time).

- The reproduction cost is the cost (for current prices) of making up an exact duplicate of the intangible in question, using the same materials, standards, designs and qualification.

- The replacement cost is necessary in order to create (for current prices) an intangible that has the same utility as the one in question. It is normal to use modern manufacturing methods at current standards with modern designs and current qualification.

  The difference between the replacement cost and the reproduction cost is the lack of non-recoverable deficiencies. Examples of intangibles whose assessment can be performed with cost-based methods: software, databases, technical documentation, technical libraries, chemical formulas, food recipes, etc.

- The remaining lifetime is analyzed and estimated by means of the following methods: the legal remaining lifetime (up to the protection expiry); the remaining contract value (i.e. for rents), the time measured according to some regulations; the physical remaining lifetime; the functional remaining lifetime; the technological remaining lifetime; the economic remaining lifetime (when it no longer generates profit); the analysis of similar elements' mortality.

  Certain aspects specific to the assessment accuracy must be taken into account for the credibility of the value obtained. The method based on costs is quite precise but it completely ignores the effect of these expenses.

- Comparison of market value method

  The method consists in comparing the market values (fair market value, exchange value) of some similar intangible assets.

  The method implies a systematic framework based on the analysis of intangible elements transactions, which are comparable with/to the analyzed case; - the capacity of generating profit; - the market served by the intangible; - the recovery of the past and foreseen investment; - the lifetime.
used and the prediction for the remaining lifetime; - the transaction moment; - the degree and risk of foreseeable wear (the physical, functional, technological and economic one); - special circumstances of the transaction (special financing, non-compete agreement, etc). This method is the best but a rich, current and verifiable database is necessary, which is difficult to obtain. At the same time, more often than not, the transactions refer to several intangibles that usually accompany a tangible asset; in this case, separating the price of a certain intangible asset becomes extremely difficult.

According to the circumstances imposed by the nature of the intangible assets, the evaluation methods can be used preferentially, according to table 2:

**Table 2. The relevance of the evaluation methods**

<table>
<thead>
<tr>
<th>Intangible assets</th>
<th>Primary</th>
<th>Secondary</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patents and technologies</td>
<td>Income</td>
<td>Market</td>
<td>Cost</td>
</tr>
<tr>
<td>Trademarks</td>
<td>Income</td>
<td>Market</td>
<td>Cost</td>
</tr>
<tr>
<td>Copyrights</td>
<td>Income</td>
<td>Market</td>
<td>Cost</td>
</tr>
<tr>
<td>Software for the management</td>
<td>Cost</td>
<td>Market</td>
<td>Income</td>
</tr>
<tr>
<td>Software for the product</td>
<td>Income</td>
<td>Market</td>
<td>Cost</td>
</tr>
<tr>
<td>Distribution network</td>
<td>Cost</td>
<td>Income</td>
<td>Market</td>
</tr>
<tr>
<td>Franchise rights</td>
<td>Income</td>
<td>Market</td>
<td>Cost</td>
</tr>
<tr>
<td>Company’s procedures and practices</td>
<td>Cost</td>
<td>Income</td>
<td>Market</td>
</tr>
</tbody>
</table>

**Another method for the assessment of intangible assets**

For some intellectual property objects submitted to a linear depreciation regime, the evaluation can be performed by means of a special method taking into account the profit taxation economy, resulting from introducing the depreciation into the expenses:

The value of the intellectual property (V) is given by the relation:

\[ V = V_p + V_a, \]

in which: \( V_p \) stands for the current value of the profit resulting from the propriety object exploitation; \( V_a \) for the current value of the profit resulting from the tax savings associated with depreciation.

\[ V_a = V_i \cdot s \cdot a \cdot \frac{1}{n} \]

where \( V_i \) stands for the integral value of the depreciable intellectual propriety; \( s \) for the tax quota on the company’s profit; \( a \) for the remaining lifetime; \( n \) for the factor of the current value per unit; \( n \) for the number of years of remaining lifetime.

**B. The assessment of the expenses and results of research-development-innovation activity**

The assessment of the C-D-I projects (including the projects of technological innovation) is performed mainly in the following cases: - merger of two companies; - temporary association; - equity contribution in nature; - sale of a distinct project to a potential client; - establishment of the intrinsic value of a share; - privatization of an enterprise.

For the innovative companies having a great number of C-D-I projects, the assessment is extremely important.

In most cases, the privatized companies have not included either the value of the technological innovation projects or the value of other intellectual propriety objects (intangibles) in the privatization cost.

In most cases, they are not registered in the balance sheet within the intangible assets or, if they are registered, their value has been established based on the production cost or / and purchasing method.

The representative value of a C-D-I project is the one resulting from updating/ capitalizing the future income flow generated by the use of the C-D-I project. In order to assess and implicitly to
record a C-D-I project in the asset accounting, a clear identification and distinction between intangible asset (which includes the notion of C-D-I project) and good-will must be made.

**The Standard IAS 38** – Intangible assets (approved by IASC in September 1993) - contains details concerning the terms which had to be used to define them and the criteria, circumstances and norms of assessing and recording some projects in accountancy, in the category of intangible assets. The Standard IAS 38 (at paragraph 42) states that "no intangible asset resulting from research must be recognized (or from the research stage of a project, generated by the enterprise). The research expenditure (or that of the research stage of a project, generated internally) must be included into the expenditure, when the expenses are covered."

The international accounting standards IAS 9 (revised in 1993) – C-D expenses and the standard IAS 9 – Intangible Assets approach thoroughly the concepts and the area of the two notions, precisely "research/development stage of an internally generated project".

The notion of research is part of the definition of the concept of “basic research”, and the respective expenses are recorded within exploitation expenditure.

The notion of development is restricted towards the definition of technological innovation and consists in "applying the results of the research or other knowledge in order to conceive or make up projects designed to generate new or substantially improved materials, procedures, products, processes, systems or services before starting a production line or commercial use".

The development activity area includes: designing, building and testing the experimental prototypes and models; designing, building and operating the pilot equipment for the activities involved; designing, building and testing the new or modernized materials for the procedures, products, systems or services involved.

There are also activities which are comprised neither into the research activities nor into the development activities: - scientific and technological information services, quality control, routine tests and trials on products; - the necessary repair works following some stoppages occurred during the production cycle; - feasibility studies; - administrative and legal procedures for patents and licenses; - routine work for improving the quality of a product; - adjusting the existing capacities to a client’s practical needs; - routine conception for tools; - devices, samples etc; - conception and execution engineering for buildings, for their re-location, for the redistribution of equipment location; - drafting the norms, standards, quality manuals, procedures, technical notebooks, etc.

If it is not possible to make a clear distinction between the research and development activities for an individualized C-D-I project, IAS – 38 stipulates combining all the expenses covered with the research ones and therefore the projects results will not be recorded in the accounting system as tangible assets, but as exploitation expenses.

In order to be able to develop and assess a development project and to incorporate its value in the patrimony value, it is necessary to meet cumulatively five criteria: the project needs to be strictly individualized, the economic and technical feasibility of the project must be ensured; there must be an interest in making use of the project results; there must be a potential market; the availability of financial, material or human resources.

The assessment of technological engineering projects is performed by means of three classical methods: based on assets (or costs); based on income; based on market comparisons.

Due to the fact that the assessment of technological innovation projects is a complex activity, it needs a close cooperation between the assessors and specialized engineers in order to put the project into practice and/or with design engineers who can insure accuracy and reasonableness in realistic evaluation that contributes to establishing a realistic value.

- **The assessment of research-development –innovation expenses**

  The assessment of research-development – innovation expenses (C-D-I) can be performed only under certain circumstances and in two distinct ways:

  a) **The typical French approach**

  The assessment of technological engineering projects (C-D-I) is performed before their completion and application. The main criteria lying at the basis of the C-D-I expenditure evaluation are: - the period of recouping the investments in the project and its application expenses; - the annual rate of the turnover increase after the project has been put into practice; - the
accessibility to new markets through the adaptability of the products and/or services offered; - the reduction of costs and increase in the profit margin.

b) The typical American approach, that is by means of the C-D-I expenditure audit

The essence of this approach consists in controlling and correcting the volume of C-D-I expenses and, implicitly, in measuring the normal size of C-D-I expenses, therefore the normal size that can be recorded in the balance.

For this approach, the assessment of the C-D-I expenses is focused on: - re-orientation of essential competences by decreasing the size of total investments by re-organizing laboratories, eliminating the double activities; - appealing to external C-D-I, to cooperation and specialization; - improving the C-D-I apparent productivity through a more rigorous selection of projects; shortening the term of launching on the market the new products by integrating the C-D-I with the reengineering process of the enterprise.

The approach of the C-D-I expenditure assessment implies going through several analysis stages and measuring with diverse economic effects.

For C-D-I projects, the most relevant assessment method is cash-flow discount that is updating the net cash-flow and the residual value. The method of C-D-I expenditure assessment is identical with the specific economic calculations of a feasibility study.

References


