MARKET-BASED METHODS OF ESTIMATION OF LOSS OF VALUE INTELLECTUAL PROPERTY AT ENTERPRISES OF THE FUEL AND ENERGY SECTOR

Mahkamova M.A.

Tashkent state technical university, University street №2, Tashkent.

Abstract. The issues of assessing the loss of intellectual property value in the market conditions at energy sector enterprises are studied. The cost approach method is revealed, which implies taking into account the cost of reproduction of the intellectual property being valued in current prices less depreciation, as the most effective method of intellectual property valuation. The article suggests the author's approach to grading the estimation of lost utility of intellectual property.

Modern economy is based on the use of high technologies, which imply the use of certain intellectual property objects. At present, measures are being taken to meet the needs of the national economy in the medium and long term not only with the necessary quality energy resources based on the sustainable innovative development of the fuel and energy sector, but also through the commercialization of intellectual potential, which allows to provide conditions for a highly profitable sector of the economy that uses renewable intellectual resources.

In the conditions of intensive development of market mechanisms in the national economy, the main content of the innovation policy of enterprises, including the fuel and energy complex (TEC), is the development and use of intensive technologies, equipment and intellectual resources that ensure high economic efficiency [1-3].

The task of improving the efficiency of production in the fuel and energy sector requires the selection of the most effective options for the implementation of STP measures, which is possible only through the application of common principles and methods for determining their economic efficiency.

The effective development of industries, first of all, the energy sector, is currently of particular importance in connection with the main tasks of the country's economy development as a whole. The Fuel and Energy Complex is a unique complex of industries that affects not only the level of development of other industries, but the entire economy as a whole. It should be noted that intellectual (creative) activity of people is the basis for effective functioning of both individual enterprises and industries and the national economy as a whole. Knowledge, experience and qualification of a person as their carrier are recognized as the basis of social development. In developed countries, the share of intellectual capital dominates, making up 70-80% of the national wealth, and is many times higher than this indicator in developing countries.

The most important type of capital that modern energy companies have is the knowledge and experience of their employees, having a common name - intellectual capital (IC). This type of capital, as the world practice shows, provides many companies with significant competitive advantages, as it is intellectual knowledge that allows the development and implementation of new types of competitive products, the effective organization of its production and sales processes, as well as ensuring the interaction of the company with its suppliers, contractors, investors and customers. The basis of intellectual capital is intellectual property.

Intellectual property (IP) - the exclusive right to use the result of intellectual creative activity in the form of pre-production of the made invention or in the form of copies of artwork, made in any form, allowing later to restore these works.

It is known that the most frequently used methods of cost approach in the assessment of intellectual property involve taking into account the cost of reproduction of the IP being assessed in current prices less depreciation. The cost of own objects of industrial property, which are part of the intellectual property of the enterprise, is determined on the basis of the above costs, including the costs of their creation, experimental development as part of the equipment and technology, where they are applied, duties for maintenance of patents for intellectual property objects (IP), advertising and marketing costs. These costs are incurred primarily due to the cost of products (works, services) subject to the rules and requirements of the Regulation on the Composition of Costs of Production and Sale of Products (Works, Services) Included in the Cost of Products (Works, Services) and the Procedure for Generating Financial Results [4-6].

According to assessment standards, when using the cost method:

- all actual costs associated with the creation, acquisition or implementation of the IMS are identified;
- the costs are specified by the price index value as of the date of calculation of the cost of the IAD under consideration;
- the accrued depreciation amount is determined.

The cost of the rights to the IAD is determined as the difference between the adjusted cost and depreciation accrued.

The complexity of this method is in determining the amount of depreciation, as for intangible assets there are no specific standards established by regulatory documents. The Tax Code of the Republic of Uzbekistan establishes the following norms for depreciation of fixed assets (Table 1.)

Table 1. Norms of depreciation of fixed assets

№	Groups of fixed assets	Depreciation rate, %
1.	Passenger cars, taxis, road vehicles, special tools, inventory and accessories, computers, peripherals and data processing equipment	20
2.	Trucks, buses, special vehicles and trailers. Machinery and equipment for all industries, foundry, forging and pressing equipment, construction equipment, agricultural machinery and equipment. Furniture for offices.	15
3.	Railway, sea, river and air vehicles. Power machines and equipment: heating equipment, turbine equipment, electric motors and diesel generators. Power transmission and communication devices. Pipelines.	8
4.	Buildings, structures and other structures.	5
5.	Depreciable assets not elsewhere classified.	10

Expenses on intangible assets are deducted from total income in the form of depreciation. The deduction is carried out on a monthly basis according to the rates calculated by the legal entity based on the initial cost and useful life (but not more than the life of the legal entity). For intangible assets, the useful life of which cannot be determined, the depreciation rates are set per five years (up to no more than the term of the legal entity's activity).

S.V. Valdaytsev [2] notes that when revaluing all assets of an enterprise from their book value to market value, one should take into account the possible depreciation of these assets. This accounting can be done in two alternative ways:

-Alternative A: if a similar asset can be found on the market at the time of revaluation with exactly the same types of depreciation as accumulated in the revalued property, then the task of revaluation is reduced to replacing the asset's book value with the observed current market value of a similar asset;

***- Alternative B*:** If this is not possible, then separately account should be taken of all types of accumulated depreciation of the revalued asset, making special discounts from its actual cost of acquisition or in-house creation (from the original carrying amount of the asset), which would correspond to the degree of depreciation of the asset in question.

The procedure providing for the direct revaluation method and the index method recommended in the Regulations on the procedure for the revaluation of fixed assets approved by the resolution of the Ministry of Economics and Statistics of the Republic of Uzbekistan dated 02.02.2001 agrees with such alternatives. RA-01 / 8-6a and registered by the Ministry of Justice of the Republic of Uzbekistan on 19.02.2001. No. 1008.

The direct revaluation method assumes a direct recalculation of the value of individual objects at documented market prices for new objects similar to those being evaluated. For documentary confirmation of the full replacement cost of objects, the following can be used:

- data on prices for similar products received in writing from manufacturing organizations and their official dealers, commodity exchanges, real estate exchanges;
- data on the value of fixed assets in hard currency as of the date of acquisition (if there is a supporting document) using a calculation coefficient defined as the ratio of the rates of the Central Bank of Uzbekistan for that period (as of the date of recalculation) and the date of acquisition of fixed assets;
- information on the price level available from the relevant government agencies;
- information about the price level published during the period of the revaluation in the media and special literature;
- expert opinions on the value of fixed assets.

The index method involves indexing the initial (replacement) cost of individual objects using indices of changes in the value of fixed assets, differentiated by types of fixed assets and percentage of depreciation and presented in the annex of the above "Regulation ..." (Table 2). In this case, a single method is applied to homogeneous objects of fixed assets (brands, types, etc.).

Table 2. Revaluation factors for fixed assets depending on their wear

Types of fixed assets	Coefficients of revaluation of the cost of fixed assets, with the amount of wear					
	before 10%	from 11 % before 25 %	from 26 % before 35 %	from 36 % before 55%	from 56 % before 75 %	75 % and higher
Building	2,9	13,8	27,5	9,2	8,1	5,5
Constructions	2,9	13,8	27,5	8,7	8,1	5,5
Transfer devices	2,7	13,0	25,8	8,7	6,5	5,2
Machinery and equipment, of which:						
power machines and equipment	1,0	6,2	18,9	27,5	5,6	3,0
working machines and equipment	1,0	6,2	18,9	27,5	5,6	3,0
tractor equipment	1,0	6,2	18,9	27,5	5,6	3,0
Computer Engineering	1,0	6,2	18,9	27,5	5,6	3,0
other machinery and equipment	1,0	6,2	18,9	27,5	5,6	3,0
vehicles		6,2	18,9	27,5	5,6	3,0
tools, production inventory and other types of fixed assets	1,0	6,2	18,9	27,5	5,6	3,0

In the absence of specific values for the depreciation (depreciation) rates for certain types of IP and categories of intangible assets, the above depreciation rates and revaluation factors for the cost of fixed assets can be used when assessing IP using the cost approach. The fairness of such application can be justified by the relevant norm of the Law of the Republic of Uzbekistan "On inventions, utility models and industrial designs". According to this norm, a product is recognized as manufactured using a patented industrial property, and a method protected by a patent for an invention is applied if it uses every feature of an invention, a utility model included in an independent claim, or an equivalent feature, and for an industrial sample - if the product contains all its essential features.

But, as practice shows, such use of depreciation rates or revaluation coefficients established for fixed assets has limited application due to the difference in the nature of the IP and the product made on its basis. All this once again exacerbates the problems of establishing for all categories of IPO and intangible assets their own norms for assessing the loss of value. The validity of accounting for the accrued amortization value, along with the determination of the useful life, raises a lot of controversy when determining the market value of IP [7-9].

As noted in the International Committee on Valuation Standards (ICSOI) "General Concepts and Valuation Principles" standard, the terminology of financial reporting does not coincide in all respects with the terminology used by appraisers. This also applies to the use of the concept of "depreciation", which can lead to confusion. For the avoidance of misunderstanding, the aforementioned ICSOI standard recommends that appraisers, when using reproduction cost and replacement cost methods, use the term "depreciation" or "accumulated depreciation" to denote any loss of value in comparison with its value, defined as the total cost of the corresponding new facility. Such losses can be caused by physical wear and tear, functional, technical or external obsolescence.

Depreciation in appraisal activities is considered as a factor of the present value of the appraisal, irrespective of the actual (historical) cost. Depreciation is viewed as a "loss of utility" and hence value for any reason.

Depreciation deductions - depreciation of fixed assets calculated in monetary terms, included in production costs and transferred to the price of goods. Depreciation deductions are determined as a share of the original cost of the property in accordance with the depreciation rates and are charged over its useful life. From this point of view, in order to determine the value of rights to IP, it is appropriate to talk about the depreciation or obsolescence of IP with the subsequent reflection of this depreciation (obsolescence) in accounting and reporting in the form of "depreciation charges".

In fact, the term "depreciation accruals" means that accountants make accruals to cover historical costs of creating or acquiring assets with an agreement that historical costs have been incurred, regardless of the basis on which the accruals were made. What matters is, as noted in the ICSOI standard, that for the evaluator, accumulated depreciation is market dependent; depreciation charges determined by an accounting agreement do not necessarily reflect market conditions.

Thus, from our point of view, to determine the degree of the lost value of an asset, the use of the mechanism for calculating "depreciation deductions", strictly regulated by the norms and standards of accounting and reporting, is not always justified and sometimes can lead to incorrect results. Given the uniqueness of IP, adhering to the recommendations of the ICSOI, in the process of determining the replacement value of rights to IPOs, it is more expedient to adhere to the concept of depreciation or obsolescence of IPO than amortization of an intangible asset, as recommended by accounting

standards. This approach is also justified because it is not so much about the transfer of the initial value of the considered IP in the prices of the product, but about the accounting of the lost utility in the Determined replacement value at a specific date of assessment.

The implementation of this approach is primarily associated with the establishment of the overall useful life (service life) of the IP.

The method of determining the degree of wear and tear based on the legal term of the exclusive rights, which is generally accepted in the evaluation practice, is not always acceptable for the evaluation of the cost of the rights to DIAs and can lead to wrong results, especially when evaluating the unique DIAs. This is due to a number of circumstances, among which we can list the following:

- the protection document (patent, certificate) certifying the exclusive rights of the intellectual property owner during the whole term of its validity may be invalidated in whole or in part;

- the effect of the security document may be prematurely terminated if it is declared invalid on the basis of an application from the patent owner and in the event of failure to pay duties for the maintenance of the security document in force within the established period. Such rule shall also apply to trademarks: the effect of registration of a trademark may be prematurely terminated in whole or in part by decision of the Board of Appeal of the State Patent Office at the request of any person due to non-use of the trademark continuously within five years from the date of registration or five years prior to filing such request. The registration of the trademark may be cancelled also in case of transformation of the trademark into a designation, which have come into general use as a designation of goods of a certain type and in case of refusal of it by the trademark owner;

- the security documents require their maintenance in force. A state duty shall be paid for maintenance of the patent annually starting from the third year. Termination of payment of the state duty for maintenance of the patent will result in termination of its validity and, therefore, termination of the exclusive rights of the right holder;

- the accounting for intangible assets stipulates that for intangible assets for which it is impossible to determine the useful life, the depreciation charge shall be set on a 10-year basis. Practice shows that certain intellectual property objects (especially in high-tech industries) may serve more than 10 years. Very often they remain relevant and in demand throughout the life of a product made on their basis;

- the legal term of property rights to computer programs and databases as objects of copyright is valid for life and 50 years after the death of the rights holder, and the right to IMS topologies - for 10 years. As practice shows, they quickly become obsolete and are used (have commercial potential) for a shorter period of time than the legal term of copyright.

Thus, there is no absolute certainty (as it happens when valuing real estate or machinery and equipment) that during the whole period of exclusive rights validity the IMS retains commercial appeal to the consumer. In this regard, for IP objects, especially if they are unique and belong to high-tech industries, it is impossible to adopt the recommendations of national accounting standards (regulations) to adopt a period of 20 years (but not more than the period of validity of the enterprise) for intangible assets for which it is impossible to determine the useful life.

Under the International Accounting Standards, the useful life of an item of property, plant and equipment is defined as the estimated period of its useful life or the volume of production expected to be produced using that item. It is very problematic to determine the lost utility of the estimated rights of use of an object of fixed assets in monetary terms. We have developed the following gradation of lost utility estimation in percentage terms (Table 3).

Table 3. Relationship between the stages of the innovation life cycle and the state of the IPR.

Innovation Life Cycle Stages	DIS status	Condition Description	Degree of lost value, %
Innovation creation	New	DIS represent the newest modern results of scientific and technical developments; the fundamental technical solutions embodied in them have been applied for legal protection and there are positive decisions on the results of patent examination; the product produced on their basis is completely new to the market.	0-5
Intensive development	Very good	The DICs are in excellent condition, suitable for their intended use; they do not need to be upgraded or modified in the near future (within two or three years); the technical solutions they offer are patented recently (the OIC priority is no later than the third one); the resulting product is new to the market where the demand for it is only emerging.	6-15
Growth	The good one is .	DIS has undergone minor changes or upgrades to restore and maintain its operational properties; is used in accordance with its purpose and technical and economic characteristics; patented technical solutions have not lost their novelty and relevance; they are used for mass production and successful sale of products on the market.	16-30

Slow down	Satisfactory	The characteristics of the DIS meet the basic requirements to ensure the technical level and industrial applicability; the main technical solutions implemented in them still have legal protection; the DIS requires significant additions and changes to improve and achieve the modern technical level and applicability; products manufactured on their basis are at the stage of market saturation.	31-55
	Suitable for use	DIS is used below its technical level and industrial applicability due to the emergence of new, better patented technical solutions; the term of legal protection for the main technical solutions they contain is at the final stage (less than one year); DIS requires significant changes in the claims to achieve the modern technical level and applicability; products manufactured on their basis are at the stage of market stabilization.	56-80
Slump	Bad	DISs are used much lower than their technical level and industrial applicability due to the emergence of new improved technical solutions overlapping their existing technical solutions; the term of legal protection for the main technical solutions they contain has been exhausted; DISs require major revision or replacement of the technical solutions they contain with significantly new ones; products manufactured on their basis are in a decline in demand for them.	81-90
Capture ex works	Not fit for use (state of "utilization")	DIS can not be used in practice, despite the modernization that can be carried out; the patent protection period of the main technical solutions has completely expired; the technical solutions implemented in them are fundamentally outdated in functional terms; the products manufactured on their basis are not in demand and are not able to meet the consumer requirements of the market.	91-100

The described approach was offered to the experts and used in the evaluation of industrial technologies at the enterprises of the fuel and energy sector, the results of which generally coincide with the results of evaluations obtained by other methods, which testifies to the validity of the conclusions concerning their market value.

Thus, the approaches to estimating the loss of value of intellectual property objects and other NMAs used in financial statements and valuation activities may differ significantly from each other. In order to prevent disputes and ensure unambiguous reporting, appropriate reservations should be made and the use of certain methods should be regulated depending on the purpose of using the results of identification and unambiguous interpretation of such situations in the relevant assessment standards, accounting regulations and tax accounting and IP value regulations.

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