

WIPO/INN/DDK/00/5(B)

ORIGINAL: English

DATE: November 2000



INTERNATIONAL INTELLECTUAL PROPERTY
TRAINING INSTITUTE
KOREAN INTELLECTUAL PROPERTY OFFICE



WORLD INTELLECTUAL
PROPERTY ORGANIZATION



THE JAPANESE PATENT OFFICE

WIPO ASIAN REGIONAL FORUM ON THE INTELLECTUAL PROPERTY STRATEGY FOR THE PROMOTION OF INNOVATIVE AND INVENTIVE ACTIVITIES

organized by
the World Intellectual Property Organization (WIPO)
in cooperation with
the International Intellectual Property Training Institute (IIPTI)
and
the Korean Intellectual Property Office (KIPO)
and with the assistance of
the Japanese Patent Office (JPO)

Taejon, Republic of Korea, November 22 to 24, 2000

**VALUATION OF INTELLECTUAL PROPERTY ASSETS;
VALUATION TECHNIQUES: PARAMETERS,
METHODOLOGIES AND LIMITATIONS**

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1. INTRODUCTION

The last decade has witnessed a tremendous growth in the recognition of the importance of legal protection of intellectual property and the value of intellectual property assets all over the world. It is foreseeable from the current developing trend that intellectual property will become a very important factor in the development of national economy of various countries and of international trade in the new millennium. Therefore, assessment of the value of intellectual property assets will play a role of ever-increasing importance in promoting these developments.

2. IMPORTANCE OF ASSESSMENT OF THE VALUE OF
INTELLECTUAL PROPERTY ASSETS

2.1 Assessment of the Value of Intellectual Property Assets Helps Raise
Public Awareness of the Importance of Intellectual Property

Intellectual property assets are the results of the creative intellectual work of mankind. However, their value is not as clear as that of tangible assets. As a result, the value of intellectual property assets is, in many cases, not fully recognized by people. Assessment of the value of intellectual property assets can help people become aware of the real value of these intangible assets, make people attach importance to the legal protection of intellectual property, and enhance their legal concept to respect the intellectual property rights.

2.2 Assessment of the Value of Intellectual Property Assets Promotes
Technology Transfer

With the development of technology and globalization of economy, technology transfer has become more common both within a country and internationally. The proportion of technology trade is seeing a rapid rise in the total volume of international trade. However, without proper methodologies for assessment of the value of intellectual property assets that can be accepted by both the licensor and licensee, they will hesitate to conclude the agreement. The licensing negotiation can be successful only when both sides are aware of the value of the targeted technology. Therefore, assessment of the value of intellectual property assets can facilitate technology transfer; on the other hand, valuation of intellectual property assets itself develops along with the development of technology transfer.

2.3 Assessment of the Value of Intellectual Property Assets Facilitates Investment in Industry

It is now a common practice that intellectual property assets, such as patents, industrial designs or registered trademarks, are taken as part of the investment involved in establishing new industrial enterprises or joint ventures. In such cases, just like the case in technology transfer, assessment of the value of intellectual property assets can facilitate the negotiations concerning the investment.

3. METHODOLOGIES OF DETERMINING THE VALUE OF INTELLECTUAL PROPERTY ASSETS

However, to determine the value of intellectual property is not an easy job. The difficulty lies not only in grasping the calculating process but mainly in determining the relative indexes and parameters. Some developed countries have conducted the valuation of intellectual property assets for a relatively long time, and experts there have already formulated some theories and put forward quite a number of applicable methods. Many useful approaches and calculating models have been produced. Nevertheless, in my opinion, it would be dangerous to put forward certain methods and assert that they are the methodologies applicable universally for determining the value of intellectual property assets. Therefore, as a speaker on this subject, I am willing to share the little initial experience with you, introduce to you the methods frequently adopted by people in China, where the practice of valuation started only several years ago.

3.1 Basic Methods in Evaluating Intellectual Property Assets

Three basic methods are frequently used in evaluating intellectual property assets in China, namely: the cost method (also: R&D investment), the market method (also: comparison) and the income method (also: profit expectation).

When cost method is applied, the value of evaluated assets is determined by subtracting all the depreciation from the replacement or reproduction cost of the same assets. The market method takes the transaction price of similar assets on market at the time of evaluation as a referential price, and different elements are analyzed and adjusted on the basis of that referential price and the value of the evaluated assets is thus determined. The income method determines the value of the evaluated assets by estimating the future desired profits and discounting them into present value.

The three basic methods provide different valuation approaches according to different philosophy. The cost method determines the value by way of the historical or present cost of forming the assets, the market method determines the value by way of the present transaction price in the market, while the profit method determines the value by way of the future capabilities of obtaining profits.

Generally speaking, all the three methods are applicable for the valuation of intellectual property assets.

3.2 Choice of Methods for Evaluating Intellectual Property Assets

In choosing an appropriate method for valuation, at least two aspects have to be considered: the purpose of the said valuation and the relevant information available.

As I have already mentioned above, the cost method determines the value of evaluated assets by subtracting all the depreciation from the replacement or reproduction cost of the same assets. It seems that to calculate the investment involved in the R&D, i.e., the generation of the target assets, is relatively not thus difficult. So, the cost method is sometimes used when it is difficult to use other methods because, in particular, the relevant information is not available. However, the cost method is often not accepted in practice as the R&D expenses are often not in proportion to the market success of the technology developed.

Therefore the market method will be more appreciated. The market method takes the transaction price of similar assets on market at the time of evaluation as a referential price, and the value of the evaluated assets is determined on that referential price. From the point of view of the market method, the correct value of an invention or a design or a trademark is irrelevant to the cost to produce them, nor is it relevant even to the profit any user of that asset may obtain, but rather relevant only to the amount which the market is willing to attribute to it as part of the pertinent sales. So, the market method is often chosen particularly when the transaction price of the same or similar assets is known. Unfortunately, such prices are often not available because inventions or trademarks are usually not developed for sale. It is therefore true that the application of the market method is also quite restricted.

As the income method determines the value by estimating the future possible profits, it is also called "profit expectation" method. It may be based upon the operating earnings obtained by the user. However, one must be aware that operating earnings are influenced not only by the intellectual property assets, but also by other different factors such as management and production processes, market and currency factors, etc. So when basing profit expectation on operating earnings, the calculated value of the intellectual property assets will normally not be equal, but rather only proportional to the operating earnings. Since the need to evaluate intellectual property assets often arises from such economic activities as investment and technology transfer, this method is most frequently used in China.

3.3 Application of Income Method in Evaluating Intellectual Property Assets

The intellectual property assets may be regarded as a certain amount of capital deposited in the bank. Bank savings can produce interest, the amount of which is determined by the amount of the deposited capital. Therefore the interest amount can help to calculate the amount of the capital deposited in the bank. When intellectual property assets produce income in the future, we may regard the income as the interest, by which the principal will be calculated. We may regard the principal as the value of the intellectual property assets. That is the basic principle of the income method.

When we deposit the capital into the bank, the interest income will be safe and stable. However, as the income of intellectual property assets is influenced also by many other factors such as management and production processes, market and currency factors, etc., it is highly risky. For this sake, the income from investment in intellectual property should be higher than the interest drawn from bank for the same amount of capital. Thus we may take

the present value obtained by discounting the future income of the intellectual property assets at a discount rate higher than the bank interest rate as the value of the intellectual property assets, which may be determined by the following formula:

$$V = \sum_{t=1}^n \frac{R_t}{(1+i)^t} \quad \text{where,}$$

- V: value of the evaluated intellectual property assets;
 R_t: income of the intellectual property assets in year t;
 t: certain year in the future;
 n: term during which income may be produced;
 i: discount rate.

Therefore, to evaluate intellectual property assets by the income method is mainly to decide the three kinds of unknown figures, namely the amount of income in the years followed, the discount rate and the term during which income may be produced.

(a) The amount of income refers to the future profit that the intellectual property assets may produce in the years to come. In other words, deciding of the amount of income has to be based on prediction. So, the principle of prediction is a principle that one should always follow.

It is the total assets of an enterprise, including both tangible and intangible assets, that bring return and income for investment. Intellectual property as a kind of asset is part of the intangible assets. The income contributed by intellectual property assets can therefore be calculated by subtracting the income contributed by other assets than intellectual property assets from the total income.

The above-mentioned way for calculating the amount of income attributed to intellectual property assets does not take the investment risks in the intangible assets and other factors, such as management, into consideration. In fact, the value of intellectual property assets often tends to be somewhat overestimated by applying that method. In light of that problem, some people hold that a profit division rate should be used, which is generally believed to be between 10-30%. However, this rate lacks satisfying theoretical explanation and therefore needs to be further studied.

(b) The discount rate is generally three-fold, which includes the risk-free rate, risk-taking rate and inflation rate. The risk-free rate refers to the lowest return rate obtained from investment by investors. The risk-taking rate is the ratio of return for risk-taking on assets. As far as the inflation rate is concerned, if the expected amount of profit does not reflect or does not completely reflect the effect of inflation, the discount rate does not necessarily need to contain the inflation rate.

To decide the discount rate is a very difficult task. However, since a little difference may lead to enormous discrepancy in value, the discount rate should be decided with

prudence. There does not exist any unified discount rate suitable for all intellectual property assets. It was once tried in China, but proved to be in vain.

(c) To decide the term during which income may be produced is another important work in evaluating the intellectual property assets, since the profit amount is closely related with that term. In the case of the exploitation of inventions, profit may grow with market penetration until a saturation is reached. Competitors will be left behind at this first time due to economy of scale effect. Then, however, competitors will catch up, and technology will become more and more obsolete, and profit will decrease. It should be noted that as intellectual property assets are legally protected, the decrease may be delayed as compared with technology without legal protection.

In the process of valuation, the methods applied to predict and decide the term usually take the following terms into consideration: (a) the term stipulated by the law; (b) the term agreed in the contract; (c) the term determined by statistics and analysis; and (d) the term determined by comparison.

It should be noted that the function of valuation of the intellectual property assets is to explain the value of the intellectual property asset, and in the last analysis it is the market that determines the value. It is not that valuation makes intellectual property assets valuable but that the value of intellectual property assets is reflected through valuation.

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