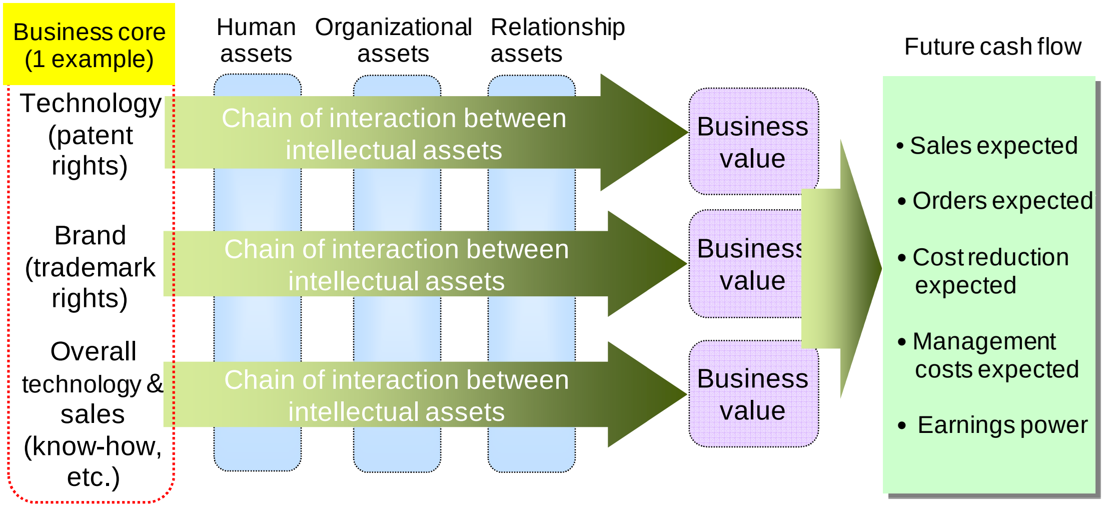
Chapter 4 Valuation Methods in Intellectual Asset-Based Management Evaluation Finance (Supplemental Discussion)

This chapter explains one way of thinking for valuation methods in intellectual asset-based management evaluation finance. As described in the framework for intellectual asset-based management evaluation finance of Chapter 1, one characteristic of financing decisions based on intellectual asset evaluation is analysis of the relationship between the company's intellectual assets and its business, and consideration of the "value of intellectual assets" which is the basis of the actual situation balance sheet. In such a case of taking a financial goals perspective, it may be desirable to investigate economic valuation as a valuation method of intellectual assets. There are various ways of thinking about intellectual asset valuation, but this chapter takes up one technique of economic valuation of intellectual assets.

1. Basic Way of Thinking about Economic Value of Intellectual Assets

An important point for the way of thinking at the foundation of understanding of economic valuation of intellectual assets is the relationship between intellectual assets which become the business core and other intellectual assets (human assets, organizational assets, relationship assets). For example, the basic way of thinking is that if technical abilities, brands, sales abilities, etc. can be considered the foundation of its business earnings, then the value of a business utilizing these is created in the process of mutual interaction between its core intellectual assets such as patents and know-how with other intellectual assets (human assets, organizational assets, relationship assets) (Figure 4-1).

Figure 4-1 Process Creating Business Value (Chapter 1, Figure 1-16 re-exhibit)

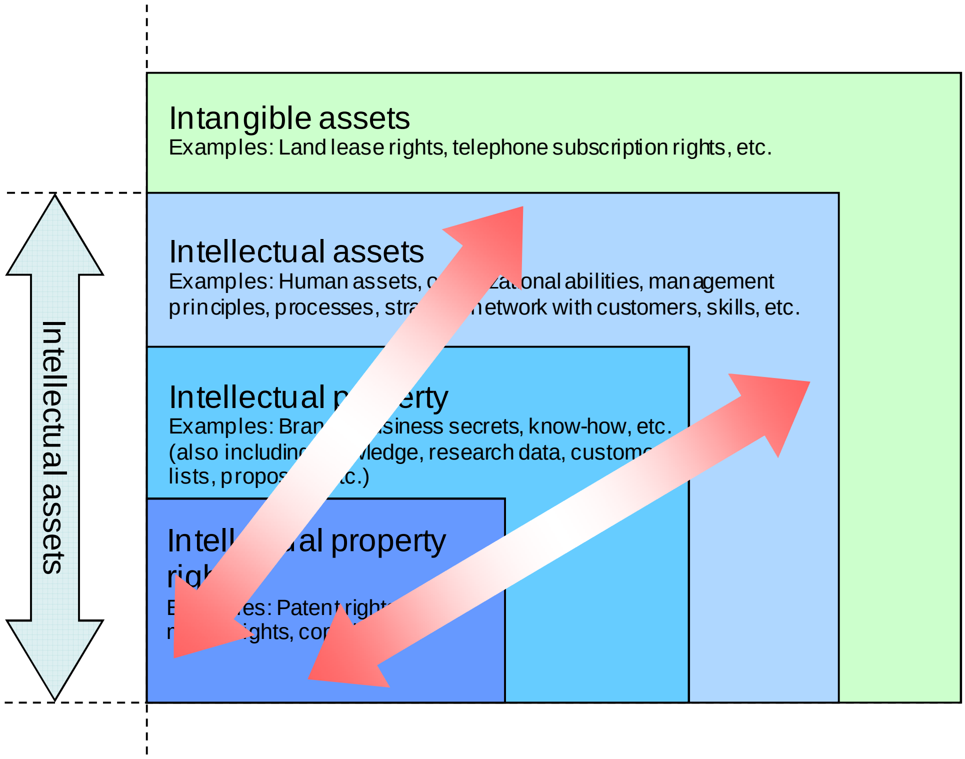


For example, if sales come about through a combination of customer relationships and superior technology, then in order to achieve continual sales, a sales manual and service process which further raise customer satisfaction (other elements of intellectual assets) become required. These interact and earnings are continually created, with the result that business value can be recognized.

2. Relationship between Intellectual Assets and Intellectual Property Rights

In intellectual asset valuation, the value of intellectual property rights such as patent rights is as described in Chapter 1. Intellectual property rights have the characteristics of legal rights, and registration also prepares requirements for perfection against third parties, thus those rights may be a source of earnings. Furthermore, if business based on such intellectual property rights is achieved, then calculating economic value with intellectual property rights as the starting point may be one option relatively easy to approach, compared to other intellectual assets. Even in such a case, one must investigate the business prospects and asset characteristics of intellectual property rights, while considering the relationship with and importance of other assets which become required in the process whereby intellectual property rights create business value (Figure 4-2). Below, we explain a valuation method for the case of setting intellectual property rights as the starting point.

Figure 4-2　Relationship between Intellectual Assets and Intellectual Property Rights (Chapter 1, Figure 1-18 re-exhibit)



Note: The intangible assets above signify all intangible business resources held by the enterprise, which is not the same meaning as intangible fixed assets recorded in the balance sheet.

3. Overview of Valuation Methods for Intellectual Property Rights

For methods of evaluating business value, there are various techniques depending on the issues and evaluation goals in the evaluation situation. In the same way, there are also various techniques for evaluation of intellectual property rights. First of all, in a broad overview of valuation methods for intellectual asset rights, one can check the techniques as shown in Figure 4-3 below.

Figure 4-3 System of Valuation Techniques for Intellectual Property Rights (by transaction form & evaluation goal)

Category	Form	Goal of evaluation	Transfer right itself	Transfer execution right	Standpoint		Intellectual property user	Selling price	Procurement price	Remarks
								Economic valuation method		
					Seller Licensor Collateral establisher	Buyer Licensee Collateral rights holder		Seller Licensor Collateral establisher	Buyer Licensee Collateral rights holder	
Rights exercise	License	Loss compen-sation for violating conduct	No	Yes	—	Party planning execution	Licensee	Patent Law Article 102	Royalty exemption method	Execution right subject to transaction, not right itself
Distribution	Sale/ purchase	Disposal by sale	Yes	Yes	Executor	Party planning execution	Buyer	Contribution approach method (Self-execution)	Contribution approach method (Self-execution)	
					Non-executor			Cost approach		
	License	Grant of execution right	No	Yes	—	Party planning execution	Licensee	Contribution approach method (Other company executes)	Royalty exemption method	
Make liquid	M&A	Business purchase Business transfer	Yes	Yes	—	Party planning execution	Party receiving transfer	Cost approach Market approach	Real option method	
	Collateral	Financing, lease	No (establish pledge right)	No (establish pledge right)	—	Financial institution	Collateral establisher	Contribution approach method (Self-execution) Royalty exemption method	Contribution approach (3rd party execution) Royalty exemption method	Patent right valuation takes a form similar to business valuation, not individual valuation. For disposal value, must investigate including consideration of selling each business.
			Yes (mortgage by transfer)	Yes (mortgage by transfer)						
Holding	Self-execution	Asset manage-ment	No	No			Rights holder	Cost approach		If doing technical evaluation, by model of evaluation by scoring
								Probability approach		

Note: Contribution approach, relief from royalty method and real option method all adopt valuation methods based on discounted present value.

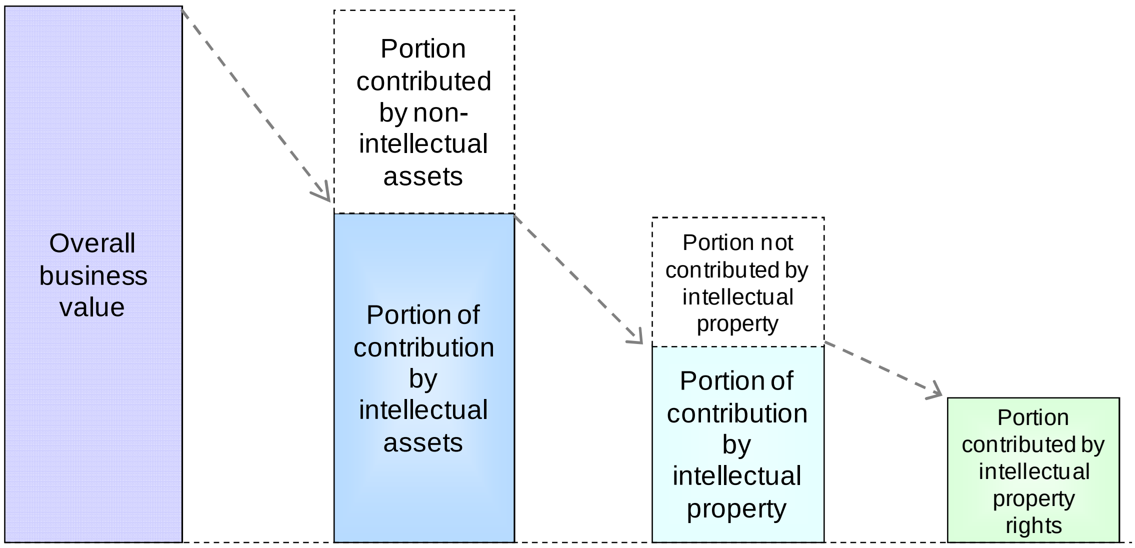
Made based on the Intellectual Property Distribution & Fundraising Examples Survey Report (November 2007, Ministry of Economy, Trade and Industry; Intellectual Property Policy Office)

In the case of intellectual property rights, the evaluation technique differs depending on various factors: form of transaction (sale/purchase, license, M&A, etc.), whether the evaluation was from the seller's perspective or the buyer's perspective, etc. It also differs according to the evaluation's goal (sale, grant execution rights, business transfer, etc.).

In the practical situation of financing goals, the contribution approach method or relief from royalty method appear to be widely adopted for many cases. The contribution approach is a way of thinking which estimates the cash flow obtained if the products which used that patent are developed and sold, and considers the contribution of that patent in order to assign a value to the patent rights equal to the discounted present value.

For example, in a situation establishing a technology business which utilized patent rights, if one tries to obtain the value of technical intellectual assets and value of patent rights in that business, as shown in the schematic diagram of Figure 4-4, this method does a factor analysis for the contributions of technical intellectual assets and intellectual property in overall business value, and estimates their values. In short, as an assumption for calculating the economic values of intellectual assets and intellectual property, this approach first calculates the present value of the business itself which utilizes that technology and intellectual property. Next, calculate the technology contribution portion of the value of the entire business. Next, calculate the contribution portion[1] of intellectual property in technology.

Figure 4-4 Valuation of Intellectual Property by Contribution Approach



[1] Strictly speaking, there is also the method of calculating the net present value of intellectual property: Take the value of these intellectual property rights as the value of maximum contribution portion of intellectual property rights, and moreover, estimate the risk factors of dependence on incompleteness of each technical or intellectual property factor element, and deduct this from the maximum value of the intellectual property as a portion of technology.

One more alternative evaluation method is the relief from royalty method. The relief from royalty method is positioned as a simple method which considers practical application aspects, though following the basic way of thinking of the contribution approach described above. This evaluation technique does not directly estimate “contribution of intellectual property in business”, but is considered one way of thinking which is a more simple and rational method of valuing intellectual assets. In addition to valuation of technology and patents, this useful method can also be applied to valuation of brands and trademarks, thus the explanation below focuses on the relief from royalty method.

4. Relief from Royalty Method

(1) Outline of Relief from Royalty Method

As mentioned above, though intellectual property valuation by the relief from royalty method, follows the way of thinking of the contribution approach method for intellectual property as described above, it is positioned as a simple method which considers practical application aspects. In addition to valuation of technology and patents, this useful method can also be applied to valuation of brands and trademarks.

The basic way of thinking of the relief from royalty method is, for example in the case of patent rights, “If one assumes use of the patent rights subject to valuation is being licensed from a third party, compare to similar license contracts to estimate the royalty which the owner would pay to that third party.” Specifically, based on the company’s business plan and sales plan, investigate the value of the patent rights by calculating an estimate of “royalties (license fees)which would have to be paid if the patents required for manufacturing that product were not held”, then calculating the present value of those amounts during the period subject to evaluation.

Value of Patent Rights
= Sum of expected earnings value of royalty revenues forecast in period subject to evaluation
= Discounted present value of forecasted royalty revenues
= Discounted present value of (forecasted sales in each period x assumed royalty rate[2])

[2] The royalty rate is also referred to as the license fee.

Also, if economic value of a brand or trademark is calculated by the relief from royalty method, by the same way of thinking, calculate an "estimate of royalties (license fees) which would have to be paid if the trademark/brand were not held", and discount to the present those amounts. Based on past results, investigate the value of trademarks by calculating an estimate of "royalties (license fees) which would have to be paid if the trademarks required for supplying the service using trademarks were not held", and discount to the present those amounts.

Methods for evaluation of intellectual property rights can be broadly categorized into three methods: cost approach, market approach and income approach, same as the evaluation methods for general other assets.[3] In selecting each evaluation approach, one must consider the character and evaluation goals of the property subject to evaluation and do a multifaceted investigation, but in doing economic valuation of intellectual property rights, an evaluation method focused on the profitability of intellectual assets is often appropriate, which is the income approach. For the contribution approach method and relief from royalty method, the way of thinking is also based on the income approach.

(2) Specific Calculation Method for the Relief from Royalty Method

For the relief from royalty method, intellectual property value is calculated by the equation and parameters below (specific examples of the calculation method are given in intellectual property valuation reports by a third party agency, as written in Case Study (2) (Patent Rights Edition) and in Case Study (3) (Trademark Rights Edition), so please also refer there).

$$\sum_{N=1}^{T} \frac{(\textit{expected sales of business or product in period } N) \times (\textit{assumed royalty rate}) \times (1 - \textit{effective tax rate})}{(1 + \textit{discount rate})^{N}}$$

- Period subject to evaluation: Years 1 to T
  (Use the remaining period of the intellectual property rights[4], or period during which possible to estimate sales and cash flow)
- Effective tax rate: Assumed corporate tax rate
- Discount rate: Expected rate of return for intellectual assets (consider individual premiums based on WACC[5])

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[3] Refer to [Reference Materials 4-1], which provides outlines of and explains a way to select each method: cost approach, market approach and income approach.

[4] Refer to Reference Materials 3 "Outline of Patent Rights (Utility Model Rights), Design Rights and Trademark Rights", page 7.

[5] Weighted Average Cost of Capital

(3) Comparison of Relief from Royalty Method vs. Contribution Approach Method

Comparing with the contribution approach method shown in Figure 4-4:

$$\underbrace{\text{Sales forecast} \times \text{Assumed royalty rate}^{6}}_{\text{Relief from royalty method}} = \underbrace{\text{Sales forecast} \times \text{Operating margin} \times (\text{Contribution \% of intellectual property rights})}_{\text{Contribution approach method}}$$

The assumed royalty rate can also be understood as reflected in one index:
Contribution % of intellectual property rights as part of business profits

As points to keep in mind when adopting the relief from royalty method for valuation of intellectual property, in qualitative evaluation of intellectual property, it is assumed that it is verified that there are no problems such as in the situation of turning intellectual property into rights, the period during which rights are valid, etc.

Also, in order to establish intellectual property as a core which creates business value, intellectual property must be technically effective and actually have marketability in application markets, which are items to check in the "(1) Simple Interview Sheet" and "(3) Intellectual Asset-Based Management Evaluation (Business Prospects) Interview Sheet" written in Chapter 2. It is necessary to verify the business value of intellectual property rights, investigating compatibility of intellectual property rights with the business, market value in application markets of intellectual property rights, and comparing with competitors.

In case of request for external evaluation of intellectual property rights, sample items in evaluation by a third party agency are attached [Reference Materials 4-2], so please refer there. For qualitative evaluation of intellectual property rights, rights characteristics confirmation, intellectual property rights due diligence, surveys of similar patents, etc. are done in more detail. Also, for business prospects evaluation of intellectual property rights, very detailed and objective verification is done for intellectual property rights' effectiveness in business, based on the intellectual property rights' market, technology and competitor survey.

[6] For assumed royalty rate or license fee, there is literature on surveys according to product category, and third party evaluation companies which calculate economic value of intellectual property also utilize this survey literature, etc. Regarding how to adopt a specific royalty rate, Case Studies (2) and (3) provide examples, so please also refer to those.

[Reference Materials 4-1]

Three Methods of Valuation of Intellectual Property Rights, and their Selection

Evaluation of intellectual property rights can be broadly categorized into three methods: cost approach, market approach and income approach, same as the evaluation methods for general other assets. One must consider the character and evaluation goals of the property subject to evaluation, and do a multifaceted investigation.

The cost approach is an approach focused on the costs necessary for creating assets. The main techniques are a method which evaluates by the total price of all expenditures in order to have the assets concerned attain their current status (historical cost approach), and a method which evaluates an estimate of the amount which must be expended in order to recreate assets with characteristics similar to the assets subject to evaluation (replacement cost approach). In this approach, the amount invested in the assets or costs needed to purchase the assets again become its value without adjustment, thus it is characterized by high objectivity and difficulty to be subjective and arbitrary, but it is also characterized by its relationship with the content of invested expenditures and economic results (portion increased if future results created) which is not necessarily clear.

The market approach is an approach which investigates value based on the transaction value of assets. Its valuation is priced according to transactions between third parties, so it is characterized by high objectivity, but especially in the case of intellectual property rights, similar transaction examples often do not exist, and its adoption is difficult in many cases. Also, there are generally few examples with intellectual property rights traded separately from the entire business, and assets which generate profits are often traded as one unit, thus one must extract the value pertaining to the intellectual property rights in the asset value of that one unit.

The income approach is an approach focused on the present value of the series of economic benefits which assets generate in the future. This method evaluates profits gained in the future by actually utilizing those assets, and it has characteristics closest to the concept of value, but it is accompanied by the uncertainty of future forecasts, so it is important to obtain reliable and stable figures for use in evaluations.

In addition, for intellectual property rights which are trademark rights (brands), there is a brand valuation model by the Corporate Legal System Study Group (“Committee on Brand Valuation”) of the Ministry of Economy, Trade and Industry. That evaluation method analyzes the portion of earnings or profits which increases in the company or business due to the brand’s existence. In that sense, it can be considered a type of income approach method.

In the case of patent rights, it is difficult to grasp the relationship between patent rights value and the technology development funds which establish patents, and it is not possible to find sample trades of similar patents, so the cost approach and market approach evaluation methods are not used often. In evaluation of patent rights, if the following conditions are arranged, the income approach evaluation method is used.

- The patent rights are essential for the business
- Also, as a result of the patent evaluation, prior technology and prior patents are not found which would negate its registration, in the content of other applications found for the same type of technology recently in the simple patent survey mentioned above and in a patent application trend survey
- Comprehensively considering the competitive superiority of products manufactured by using the patent rights, it is considered reasonable to do an economic valuation focused on profitability of a business with the patent rights at its core

In the same way, for trademark rights, even if money is spent on advertising and sales promotion expenses, the same current position of the trademark and the same economic benefits would not necessarily be obtained, and it is difficult to estimate the funds for building value expended by parties related to the trademark rights including the company being evaluated, so in such a case, the cost approach evaluation method is not adopted. There are also often no transfer or license transactions for the trademark rights held by the company being evaluated, so in such cases, market approach evaluation is not adopted. It is common that the trademark rights being evaluated are considered core rights in the business development, and reasonable to do a valuation focused on profitability of the products and business with the trademark rights at their core; In such cases, the income approach is generally adopted.

[Reference Materials 4-2] Sample Flow & Evaluation Items of Intellectual Property Evaluation by Third Party Evaluation Agency

Patent

(1) Specify Scope of Rights, and Arrange Basic Information

- Confirm rights qualities (ownership of rights, situation of turning into rights, whether or not to set as collateral)

(2) Due Diligence of Intellectual Property (Rights)

- Existence of intellectual property related lawsuits, liquidity of patent rights, check for flaws

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Market & technology

(4) 2nd Evaluation of Effectiveness in Business of Intellectual Property (Rights)

- Market survey (demand trends in markets for products & services using the intellectual property)

(Check relationship between intellectual property and market needs)

- Technology survey (Analyze characteristics and superiority of the

↓

Economic valuation

(5) Valuation Method for Intellectual Property Rights

- Investigate relationship between intellectual property rights & business
- Choose the optimal evaluation approach
- Establish a scenario for market and business forecasts
- Establish forecast parameters (period, discount rate, etc.)
- Investigate other costs