Intellectual Property
Finance and Valuation

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About the Lecturer

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Former Director of New Business Investment Co LTD (NBI)
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London Business School  1992
(  Slone Program,  Master of Science in Management)
Harvard Business School  2001
(  Advanced Management Program)
Contents

1. Intellectual Property Worth
2. Qualitative & Quantitative Valuation
3. Quantitative Valuation Methods
4. Loan protected by Intellectual Property
1. Intellectual Property Worth

- **Value**
  - Value changes greatly with needs of the company
  - Value is relative (not absolute)
  - Value is determined by the **vision** of company
  - Vision serves as standard for measuring value
  - **Time** is also important element
Due Diligence of Intellectual Property

- Separability
- Legal right
- Creation capability of cash flow
- Existence of excess benefit
- Risk assessment
- Economic life
- Invention by employee clearance
Value Acquired from Intellectual Property

- Cash flow
- Reputation and image
- Access to technology which other company holds
- Evasion of lawsuit
- Cost reduction
- Competition prevention
- The barrier to entry to potential competition partner
- Access to other market
- Leadership in the field
Value of Intellectual Property

Decision-making objectives
1. cash flow
2. contribution to corporate value
3. strategic value

Important to clarify for what purpose valuation is carried out
Difficulty of Intellectual Property Valuation

- Worth of intellectual property changes with the usage or users
- Value decreases rapidly by external factors, such as technological innovation
- Worthless by invalid trial decision
- Operation period is unstable
- Cash flow is unstable
2. Qualitative & Quantitative Valuation

① Qualitative Valuation
Relative valuation (novelty, progressiveness)
For research & development expenses and decision making

② Quantitative Valuation
Financial valuation (Money)
For license, transfer, compensation for damages, financing
① Qualitative Valuation

(1) Technological Viewpoint
(2) Legal Viewpoint
(3) Marketing Viewpoint
(1) Technological Viewpoint

- Stage of development research, basic, applied, developed period
- Development risks (development stopped in the middle)
- Completion risk (speed)
- Fit to market needs
(1) Technological Viewpoint

• Predominance to prior technology superiority of problem solving, magnitude of innovation (sustainability)
• Status comparison
  Fundamental vs. Improvement performance, cost, quality, expansion to other technology
(1) Technological Viewpoint

(1) Core
   long-term core (essential patents)

(2) Complementary technology

(3) Surrounding technologies:
   complementary or surrounding technologies
   sometimes can form new cores

(4) Defense patent
(1) Technological Viewpoint

• Standardization
• Imitation difficulty
• Obsolescence risk (remaining duration)
• Additional development investment cost
(2) Legal Viewpoint

- Strong and large range
- Strong implement ability
- Low infringement possibility
- Effectiveness
(3) Marketing Viewpoint

• Existence & Scale expansion
• Market potential
• Value for customer (PLC)
• Sustainability
• Competitiveness
• Complement and compatibility
• Network, spread
• Entry barrier
3. Quantitative Valuation Methods

(1) Cost Approach
   Reconstruction expense method, replacement cost method, the historic cost method

(2) Market Approach
   Similar dealings comparison method, per-share earning ratio method

(3) Income Approach
   DCF method, excess profit method

(4) Patent Grading Indication Approach
   Patent score method
(1) Cost Approach

◆ Calculates with historical cost

◆ Typical cost: material cost, labor costs, factory, consultant, advertising expenses
(1) Cost Approach

- Historical cost method
  - Which portion of expenses contributed to acquisition of patent right
  - Determination of when certain project started and when completed
  - The assignment rate of allocation to indirect costs, such as head office cost are difficult
(1) Cost Approach

The important matter

◆ Risk is not reflected
◆ Even if it spends cost of same class, the same effect is not necessarily acquired
◆ The result of succeed or lost is not reflected
◆ Should correspondence to obsolescing and worthless
(1) Cost Approach

◆ When cost approach is suitable

• When it is difficult to predict the income based on intellectual property
• When not move for third party
• When developed for inside use or it cannot resell
(2) Market Approach

• The most objective, since it is based on actual market price

• Similar dealings are used when market price cannot be used directly

"Similar type-of-industry " or "similar company ratio " is used

Example:

Earnings-per-share $\times$ similar company PER

$= \text{anticipation stock price}$

(PER= stock price / earnings per share)
(2) Market Approach

• Actual market price accepted to have dealt with between third parties at rational price in the market

• Required to be **open market** to which dealings are conducted actively, and to conduct dealings of **similar property** which can be compared
(2) Market Approach

• The information about dealings of the price of intellectual property are very rare
  ⇒ restrictions of this approach

• The requirements for open market and dealings track record
(2) Market Approach

• Difficult to evaluate the exact price
• **Effective method to guess** the market price of intellectual property
• Practically it is used for calculation in case venture capital responds to investment and price calculation of M&A
(3) Income Approach

• Method of calculating current value based on the expected economical earnings of intellectual property

• For examination of income produced by the intellectual property, feasibility, the period (sustainability) of service, the discount rate is needed
(3) Income Approach

Basic requirements
Anticipation of future income

**Risk** of the implement ability of prediction income

**Discount rate**

**Term** of validity

The rate of expected growth of income
(3) Income Approach
Valuation of Business Potential

• Future prediction
  Sales growth rate, profit ratio

• Market potential
  Market environment analysis, other-company-in-the-same-trade comparison, market size

• Business possibility
  Competitive advantage analysis
  The life cycle of a product, Scenario analysis

• Economic variable, political risk
• Estimated Usable Period
The example of valuation reference by a DCF method

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(3) Income Approach

The important matter

• The **contribution** of the intellectual property in the future profit on business plan should be **understandable** ・・・・・・・・25% rule

• Various numerical values are computed based on track record or **rational premise**

• **Continuity, rationality**, and compatibility are accepted between the past and forward planning

• The **life cycle** of technology and goods are taken into consideration
Reasons of Difficulty

① Identification of intellectual property unit itself separate from corporate is very difficult
② The value of intellectual property vary widely depending strategy and competitiveness
③ External disclosure information is limited
④ Limited visible trade case
4. Loans Protected by Intellectual Property

(1) Difference of loan and investment
(2) Loans Which Utilize Intellectual Property
(3) Loan Protected by Intellectual Property
(1) Judge Standard of Invest and Loan

Basic aspect of invest

- IPO/M&A?
- High stock price?
- Manage the company?

Basic aspect of Bank

- Pay interest?
- Pay principal?
- Safety Cash flow?
- collateral and guarantee?

Growth

Risk of high growth

IPO/M&A

CF important
(1) Difference of Invest and Loan

Loan: 10 companies 9 success, 1 fail
- interest 5% loan 100 million
Success interest 5mil × 9 = 45 million
Fail principal Δ 100
Total Δ 55 million

Invest: 10 companies 1 success 9 fail
- success 1 : 10 times + 900 million
fail Δ 900
total 0

Loan has very little risk endurance, can not get upside return
Invest depend on how many times when a company success
(2) Loans which Utilize Intellectual Property

- **Intellectual property collateral loans**
  Assess intellectual property as collateral
  Loan about 50-70% of its value
  It is useful when intellectual property distribution would be expected

- **Loan evaluating intellectual property**
  Think IP information as one important information for loan decision

**Loan guarantee**: guaranteed rate 0.5-3%
(3) Loan Protected by Intellectual Property

Suitable intellectual properties for collateral
✓ Core competence
✓ Provide current business cash-flow
✓ Marketability
✓ Value stability
✓ Strong rights, registration

Valuation methodologies
✓ Based upon projected business cash-flow
✓ Present value discount cash-flow method
(3) Loan Protected by Intellectual Property (Valuation)

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<td><strong>Cash flow</strong></td>
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<td><strong>Net present value</strong></td>
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<td>3</td>
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<td>- Transfer Cost</td>
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</table>

Valuation of Intellectual Property 43
Scheme of Loan protected by Intellectual Property

Current business
Cash-flow

Intelectuall
Properties A of
stable business

Venture

Intelectuall
Properties B of New
Development

Projected business
Cash-flow

Evaluation

bank

collateral

Loan
R&D cycle based on Loan protected by IP

Project A
Intellectual Properties

Project B
Intellectual Properties

Project C
Intellectual Properties

Project D
Intellectual Properties

**Project NO. 1**
Loan to new project B, Intellectual Properties of current business A as collateral

**Project NO. 2**
Loan to new project C, Intellectual Properties of current business B as collateral

**Project NO. 3**
Loan to new project D, Intellectual Properties of current business C as collateral
Intellectual property rights which can be collateralized

[Program copyright of software]
• The software which is used continuously?
• Correspondence to upgrade
• Circulation possibility
• Copyright possession
• Update and transfer possibility
• Manual reservation required for taking over
Intellectual property rights which can be collateralized

[Patent right]

• All Rights are required in order to take over: patent, design right, trademark right which constitute final products
• Outsourcing is possible?
• Possibility of technological obsolesce
• Correspondence to new technology
Intellect Property collateral maintenance check points

- Management
  - Relations of financing period and validity
  - Patent royalty payment check
  - Follow of the version up
  - Risk of the invalid judgment
  - Law suit risk
Intellect Property collateral
maintenance check points

◆ View points from credit maintenance

✓ When many rights exist, product is not made from only one basic patent
✓ Securing of right before and after bankruptcy
✓ Without manuals and core persons, actual value is small
✓ List of customers, special machine should not disperse
## Check Points

<table>
<thead>
<tr>
<th>Technology</th>
<th>Check points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer program</strong></td>
<td>Confirm the range of copyright of developer When software name is recognized in the market, trademark has high value</td>
</tr>
<tr>
<td><strong>Internet site</strong></td>
<td>The recognition of the site is important Whether it is a site producing profit</td>
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<tr>
<td><strong>Contents of the music picture</strong></td>
<td>Obsolescence speed is very fast Hit series or famous producer?</td>
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<tr>
<td><strong>License charges</strong></td>
<td>Check of license charges Stability of licensee</td>
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Security disposal

- Actual situation is considerably severe
  - The intellectual property rights of bankrupt company are basically very low reputation
  - Sale negotiations range are narrow: customer, competitor, former employee
  - Buyers want to see secret drawing and engineer in the early stage
  - Owner hesitate to open these secret
  - After bankruptcy these value decrease dramatically \( \Rightarrow \) **Timing** is very important
### Example of Loans Protected by IP

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<th>company</th>
<th>Projyect</th>
<th>Collateral</th>
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<tbody>
<tr>
<td>A</td>
<td>polarizing lens development for sunglasses</td>
<td>patent</td>
</tr>
<tr>
<td>B</td>
<td>Industrial use X-ray check device</td>
<td>patent</td>
</tr>
<tr>
<td>C</td>
<td>Jazz record first edition right copyright</td>
<td></td>
</tr>
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</table>

1. Know-how of the intellectual property security financing is accumulated in the organization by managing many cases.
2. Because the scale of financing is small, and the bankruptcy probability is high, it is not so sweet for bank profit.
(3) Loan Protected by Intellectual Property (Problems)

✓ Secondary market of IP is un-fixed
✓ Valuation technology is not yet established
  Quick obsolescence and sudden change
  Income anticipation instability
  Valuation of taking over cost
✓ Independency and separability
  Move for third party is not easy

⇒ Major doubts about the collateral quality