



**Asia-Pacific
Economic Cooperation**

Tanikei Manufacturing Ltd
Japan

**How to Find IP Price and Manage
IP Transaction in SME**

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In April 1996, Mr Taniuchi, the president of Tanikei Manufacturing Ltd met with two businessmen from Chicago in the company's offices in Japan. The visitors were representatives of the steel can manufacturing division and risk management division in Heinz USA. They had come to Japan to ask Mr Taniuchi to sell them the US patents of the "safest pull-top technology in the world" that Mr. Taniuchi invented. Likewise, they wanted to be given exclusive license for the product outside Japan and the US for 10 years; Mr Taniuchi could make and sell the products outside the US, but no other license should be issued to other companies.

During the one-hour meeting, one of the visitors asked, "Mr Taniuchi, what is the price of the rights to the US patent and the exclusive license for your product in the rest of the world except in Japan and the US?" Mr Taniuchi was excited but calmly considered what his price offer should be. He just said, "I will give you my answer after two weeks." They said, "Okay, take your time, but it should not be later than two weeks." In their subsequent discussion of the next step in the IP (Intellectual Property) transaction, Mr Taniuchi felt that his visitors appreciated the value of Tanikei's technology. As Taniuchi saw them off at the Narita Airport, he wondered how he could determine the appropriate price for his IPs.

Company Profile

Tanikei Manufacturing was established in 1963 as a company specializing in the design and manufacture of precise molds. As a small family-owned manufacturing company that supplied its products to big companies for a small profit, Tanikei relied solely on Taniuchi's experience to run the business.

Mr Taniuchi, the president of Tanikei, had acquired the skills and craftsmanship for manufacturing molds in a small metal factory where he worked for 16 years before he put up the company. During those years, Mr Taniuchi learned the skills of experienced workers just by watching them make molds.

Sometime in 1973, Mr Taniuchi visited an exhibit of auto-processing machines used for the design and manufacture of molds. He was shocked to see precise molds that were being manufactured by high-specification machines. Those machines accomplished in less than 30 minutes tasks that would have required several days of manual work. Mr Taniuchi feared that small manufacturing companies such as Tanikei Manufacturing in Japan might soon be taken over by the new machines. He thought that there was a need to develop new technologies which high-tech machines could not imitate. Soon after, he started to develop a number of new products that were not yet available in the market.

Japanese Monozukuri Company

Tanikei Manufacturing was a typical Japanese *monozukuri* company. In Japan, the *monozukuri* company was defined as a company with micro fabrication technology, such as mold and turnery technologies, and the accumulated experience, craftsmanship and expert know-how of its engineers.

The typical monozukuri companies were small in scale, usually comprised of less than five employees. They could be found all over Japan. Ota-ward in Tokyo and Higashi Osaka were famous for their monozukuri companies. The products of these companies- components or molds supported by their technologies - were used as components of products made by many Japanese multinational companies such as Toyota and Sony. It is no exaggeration to say that the quality of Japanese products came from the sophisticated technologies of these small monozukuri companies.

However, as Mr Taniuchi expected, after the 1980's many monozukuri companies found themselves struggling to survive because of aging engineers and company owners as well as the shift of the production base from Japan to overseas locations. Their manufacturing knowledge and expertise were usually lodged with specific workers and were rarely protected by patents. It was not common for these companies to transfer their technologies or license them out to other companies to acquire added benefits. At the same time, they were likely to use the technology mainly for their own small volume production; therefore, their competence was easily influenced by the shift of production to overseas locations and the cheap import substitutes in the 1990s. In addition, due to aging engineers and owners, the transfer of knowledge and know-how became a big issue in the 2000s. In Ota-ward, a program was initiated by the government to transfer the know-how of 100 chosen skilled engineers and preserve their skills among the younger generation.

Technology

Sometime in 1983, Mr Taniuchi read the news about an American pianist who won a Product Liability (PL) lawsuit involving an accident in which the pianist had injured his finger while opening a pull-tab type can. Mr Taniuchi found out that there were about 1,500 lawsuits a year in the US involving similar accidents.

Feeling sorry for the unfortunate pianist, Mr Taniuchi started to design a "safe can top" and created many prototypes which went through numerous trial and error testing for five years. He believed that if his company could succeed in developing the "safest" product, it would be sold all over the world. He made 1/1000 mm adjustment to prevent fingers from touching the sharp edge of the can top. In 1991, he completed the development of the "safest can top" shown in Figures A and B. It was called "the double-safety can top."

Figure A

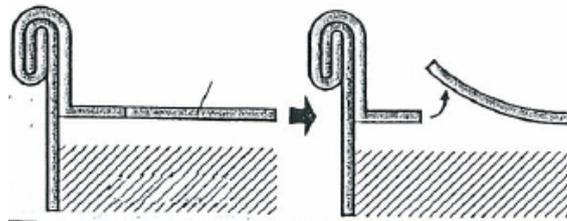


Figure B



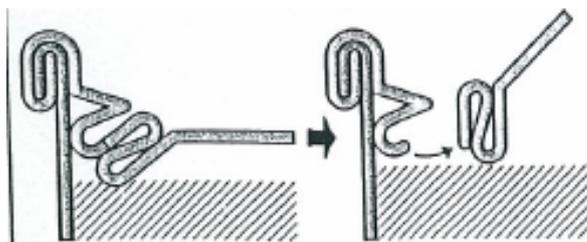
The inner coating material of the original can top lid made it difficult for the lid to be removed from the can. In the case of “Normal Can Top” (Figure C) forcing the can opening made the cutting edge very sharp, resulting in finger injuries.

Figure C. “Normal Can Top”



In “the double-safety can top” invented by Mr Taniuchi (Figure D), the sharp edge of the can top was covered by a smooth enclosing wall and was not exposed on the surface. Unlike the edge of a conventional can top, the edge of the safe can top was naturally rolled up after it was cut. Mr. Taniuchi designed the can top edge to be rolled up in a loop. After numerous tests on the tightness of the loop, Mr. Taniuchi came up with the right shape that could smoothly and safely open the cans.

Figure D. “Double-safety can top”



The double-safety can tops not only ensured safe openings but were also strongly resistant to internal and external pressures. Because the cutting edge of the can was wrapped up in an enclosing wall, its dynamic strength was high. Even if the thickness of the can were to be reduced by 30%, this can top would still maintain the same strength as other conventional can products.

Business Strategy in Tanikei

After successfully developing the safe can top, Mr Taniuchi had to decide how to sell the product or the main technology of the safe can top. His personal goal was not only to attain financial gains but also to make a social contribution. He came up with his innovative ideas because he liked engineering which could give people a better life and make them happy; he wanted to help prevent injuries from can tops. There were three possible business strategies that he considered:

1. Manufacture and sell their new can tops themselves.
2. Manufacture their new can tops through a contract manufacturer and sell them themselves.
3. License out their IP and transfer the technology to can makers.

In considering the first strategy, Mr Taniuchi had to bear in mind that as an engineer, he wanted to manufacture the products in their own factory. The technology of the safe can top was his own idea and he did not want anyone to imitate it. He wanted to adopt the first strategy to keep the trade secret within the company. However, aside from him Tanikei did not have any sales force and network to sell safe can tops inasmuch as the company manufactured molds and metal parts.

Soon after developing the product, Tanikei started the production and export of safe can tops to Chinese Taipei because of a direct order from a can maker. Although it was successful in the beginning, the transaction with Chinese Taipei ended in 1995 due to the rapid appreciation of the value of the yen. In Japan, it was very difficult to sell only can tops to domestic can makers and food companies, the main users of steel cans.

In considering the second strategy, Mr Taniuchi tried to ask some contract manufacturers to produce can tops and sell them to can makers in Japan. The contract manufacturers agreed, but only if they were paid the full manufacturing cost up front. It was a very difficult condition for Tanikei in terms of finances. Likewise, the can makers usually had their own manufacturing process and facility to make steel cans and were not interested in buying can tops. Mr Taniuchi therefore had to give up the second option.

Finally, Mr Taniuchi considered negotiating with large Japanese can manufacturers the licensing of his IPs and know-how. Although this meant that Tanikei would have to give up its own product, Mr Taniuchi still wanted people all over the world to use safe can tops and avoid the same tragedy that befell the American pianist. Also, it was the only way that he could monetize his patents and technology. He thought he would need money to commercialize his invention and develop new products. He thus decided to license out his patents and know-how in the belief that Japanese can makers would be desperate to buy his technology.

Contrary to his expectation however, the Japanese can makers were "cruel" to Tanikei Manufacturing. During the first meeting, Mr Taniuchi showed them the certifications of Tanikei's IPs and explained the technology of the safe can tops. One of the representatives of a can maker said, "We have invested a huge amount in a similar technology. Do you believe that we can't develop the same technology that you have invented? Why do you threaten us and want to sell us your IPs?"

At the second meeting, Mr Taniuchi brought a sample of the double-safety can tops and demonstrated how safe the product was. The companies changed their attitude and became interested in the “double-safety can tops” technology. However, before the non-disclosure agreement among them could be arrived at, they repeatedly asked how the product was made. Fearing that his technology might be stolen, Mr Taniuchi hesitated to disclose what the companies wanted to know. Because of this, the companies rejected what he was offering and prevented Tanikei from selling safe can tops in Japan. They refused to use Tanikei’s double-safety can top and did not heed their customers’ request to use the product. As a result, Tanikei’s business did not prosper in the Japanese market.

Fortunately, a famous industrial magazine “The Canmaker” featured Tanikei’s safe can top technology. As a result, more than 30 can makers visited Tanikei and admired the invention which had the possibility of replacing a standard pull-tab type can. One of the visitors was from Heinz USA - a company that desperately wanted to be the first in the industry to use safe can tops.

Heinz USA

Heinz USA was founded in Sharpsburg (a suburb of Pittsburgh), Pennsylvania in 1869 by an entrepreneur, Henry John Heinz. Their products included tuna and other seafood products, pet food, baby food, frozen potato products, soup (canned and frozen), sauces/pastes, beans, and other processed food products. They employed approximately 32,500 people around the globe in 2009. Their annual sale was over \$10 billion all over the world. They continued to engage in the business of manufacturing and marketing processed food products and ingredients for food products. Their products were manufactured and packaged to provide safe, stable, wholesome foods used directly by consumers, and foodservice and institutional customers.

Heinz had to handle over 150 claims¹ per year mainly on finger injuries incurred when opening cans of Heinz products. Although Heinz had conducted research and developed new technologies in their laboratories, they could not find a solution to the finger cutting accidents. Their company mission was to deliver safe food to consumers but they could not achieve their mission because of lack of technology to address the problem that had already become an important management issue. The company not only had to pay a lot of compensation for damages, but was also risking its reputation and brand image.

The quality control team in Heinz had been looking all over the world for the technology that would make safe can tops. One day, one of the quality control team members in Heinz read the “Canmaker” and found the article on safe can top developed by Tanikei Manufacturing. He called the New York office of JETRO (The Japan External Trade Organization), a government organization promoting technologies of Japanese companies, to ask their help in arranging a meeting with Tanikei.

¹ This figure was disguised.

Negotiation with Heinz on IP Transaction

In September 1995, the representatives of Heinz visited the office of Tanikei Manufacturing and held their first meeting with Mr Taniuchi through the help of JETRO. The Heinz representatives admired Tanikei's technology and started talking about the conditions and contracts for the transfer of Tanikei's IPs and technology to Heinz.

First, Heinz asked Tanikei to sell four US patents which Tanikei applied for in the US in 1985 and acquired in 1991. Also, while Tanikei could use his IPs in Japan, they wanted to have exclusive license of the patent in the rest of world.

Second, Heinz requested Mr Taniuchi to effect the technology transfer. If Mr Taniuchi accepted their proposal, he would have to stay in Chicago for three months to install the machine and teach the engineers in Heinz how to make the double-safety can tops. They would pay \$120,000 for the technical assistance.

Mr Taniuchi answered through an interpreter, "I need time to think about your proposal." After the meeting, he considered what he had to do. He was moved by the enthusiastic attitude of Heinz, which was completely different from what he experienced from Japanese can makers.

Reacting to the first condition that Heinz would obtain the US patents and license the IPs except in Japan, Mr Taniguchi felt that he would not want to give up the worldwide market and limit Tanikei's IP and production to Japan. However, he thought that since it would never be possible for Tanikei alone to sell their can tops in the world market, it would be better to accept the Heinz offer as suggested.

As for the second condition on technology transfer, Mr Taniuchi was worried that he would have difficulty in communicating with the Heinz staff because he could not speak English and had never been abroad. He thought however that "Even if the language and culture are different, the spirit of an engineer would be understood. I should do it if my technology is needed anywhere in the world." He also made a decision to go to Chicago and teach his technology.

Tanikei Mfg and Heinz held several meetings and talked about the details of safe top cans and how the technology transfer could be done. Mr Taniuchi was not used to negotiating conditions in a businesslike manner, especially with American counterparts. It was very hard for a Small and Medium-sized Enterprise (SME) such as Tanikei Mfg to negotiate with a large firm like Heinz. Because a typical SME in Japan usually had annual sales of \$1 million with 4-5 employees, it could not afford to hire a professional staff who was knowledgeable in IP related matters.

Mr Taniuchi was getting very tired with the negotiation regarding the conditions of the sale and the IP pricing. After his last meeting with the Heinz representatives who asked him again at what price he wished to offer his IPs, he hired a professional consultant with prior experience in IP transaction who was introduced to him by the government office in Ota-ward in Tokyo. With the help of the consultant, the problems in negotiation were gradually solved.

General Methods of IP Valuation

To help him determine the price at which he was willing to offer his IPs, Mr Taniuchi called his IP consultant and asked the latter how the IPs could be valued. The consultant taught Mr Taniuchi how they could figure out the value of his IPs based on the three methods of IP valuation that were generally used for the valuation of other assets. These were:

1. Cost approach method

The cost approach method focused on costs needed to create the IP asset. Under this method, there were two ways to evaluate the IP value, namely, the historical cost approach and replacement cost approach. In the historical cost approach, the valuation was arrived at by accumulating all costs such as Research & Development (R&D) costs in the past to realize current assets. The replacement cost approach estimated the costs necessary to develop the IP at its present state.

In the cost approach method, IP value represented the total costs to create the asset or costs needed to replace the asset. For example, if a company used \$2 million as R&D cost to create an IP, or needed the same amount to replace the IP, its value was estimated to be \$2 million. However, it would be difficult to prove the relationship between costs to create or replace asset and economic values from the assets. For instance, \$2 million of R&D cost might be just cost used and the IP might not make any profit in the future. Therefore, valuation arrived at using the cost approach might be considered as reasonable and fair valuation, only if it were done with the utmost objectivity.

2. Market approach method

The market approach method was used to evaluate assets based on the market transaction price. For example, if an IP in a similar technology area was traded at \$1 million, the value of the IP was estimated to be close to \$ 1 million. This approach was appropriate for valuation of assets that could be traded in the market, such as equities of companies and real estates. Although the method was highly objective since it made use of transaction prices among third parties, it would be difficult to find similar transactions that could be used as the benchmark for the valuation of the IP under consideration. Also, generally speaking, it was very rare for IP to be transacted separately from the whole business. In such cases, it was very hard to estimate IP values from the whole asset.

3. Income approach method

The income approach method presented values of future cash flow derived from assets. Similar to equity valuation using DCF (Discounted Cash Flow) method, it indicated valuation of future income to be acquired by utilizing the IP assets. Otherwise, future saving cost could be used for the valuation. It was essential to maintain credibility and stability of the forecast of future income used for valuation. Generally, the present value in this method was calculated using the following formula.

$$PV = \sum_{t=1}^T \frac{FCF_t}{(1+r)^t}$$

PV: Present Value
 FCF: Future Cash Flow
 r: Discount Rate
 T: Time

A typical income approach method in IP valuation was the royalty-relief method, a simple method with a practical application. In addition to valuation of technology and patents, it could also be applied to valuation of brands and trademarks. Even if a company were able to use its own patent freely, the basic assumption was that if the patent was being licensed to a company at the fair royalty rate, the company might have to pay some royalty to a third party. The fair royalty rate could be estimated from royalty rates used for a similar technology. "Assumed royalty" was calculated from sales based on the business plan multiplied by the estimated royalty rate of a similar technology.

Value of IP in royalty - relief method

= *Discounted present value of assumed royalty revenues*
 = *Discounted present value of (forecasted sales in each period x estimated royalty rate)*

$$= \sum_{t=1}^T \frac{ARR_t}{(1+r)^t}$$

PV: Present Value
 ARR: Assumed Royalty Revenue
 (forecasted sales in each period x estimated royalty rate)
 r: Discount Rate
 T: Time to expiration of IP

When selecting the valuation approach from the three alternative methods, the features of each valuation and the purpose for evaluation must be considered. In conducting economic valuation of intellectual property rights, the income approach such as royalty-relief method was often considered to be appropriate, if the focus was on the profitability of intellectual assets.

Valuation of Tanikei's IP

Mr Taniuchi tried to estimate the value of Tanikei's patents on his own, using the three valuation methods. He calculated the total value of the sale of US patents and exclusive license in the rest of world, assuming that the entire license fees were to be paid one-time and up front. He learned that the general discount rate was 8% and the duration of the IP was 10 years.

Using the cost approach method, Mr Taniuchi estimated the development cost of the double-safety can top. He spent five years in developing his product from scratch to the complete model. He spent 100 days every year at \$300 per day, the salary paid to Mr Taniuchi and another product development staff. They spent an additional \$300,000 a year for materials and patent filing.

As for the market approach method, there were no public data on an IP transaction of similar products. When Mr Taniuchi met the patent attorney and other IP professionals, he was told that the data on IP transaction was rarely disclosed because it was usually a small-scale private transaction. Because of the lack of data, Mr Taniuchi had to give up the use of the market approach for IP valuation.

Using the income approach method, Mr Taniuchi estimated the amount that Heinz could save on compensation and reparation for finger cut injuries of people buying Heinz products. From 1992 to 1996, a number of their customers had finger cutting accidents while opening can tops of Heinz products (see the following table). Heinz had paid \$100,000 for each reported case, including settlement fee and legal fee. Mr Taniuchi estimated that 50% of the cases could have been prevented completely by Tanikei's technology and the compensation costs in 20% of the cases could have been reduced by half.

Number of Reported Cases of Finger Cut Accidents in Heinz²

	1992	1993	1994	1995	1996
Number of finger cut accidents	34	43	37	48	52

Using the royalty-relief method, Mr Taniuchi calculated the IP value of Tanikei's technology. He assumed that Tanikei would grant the use of their patent not only to Heinz, but to other can makers in the world as well. He estimated that the market size of global metal can was \$1 billion³ in 1996, and would be stable in the future. According to the royalty data book, average royalty rate for can products was 3%. Mr Taniuchi believed that Tanikei's patents would account for 10% of all patents for producing cans.

Mr Taniuchi's Options

After Mr Taniuchi reviewed the IP valuation methods, he still wondered which method was reasonable both for Tanikei and Heinz. He had to decide the offering price to Heinz in the next meeting. If he offered a high price, they might cancel the IP transaction. However, he wanted to offer his IPs at a price that both parties would be satisfied with. Also, he had to consider how he would negotiate the IP transaction with Heinz; he had never experienced negotiating IP transactions before. He was afraid that the negotiations with foreign companies would be different from those with Japanese companies in terms of negotiation style and business dynamics. One option was to ask his consultant to act as the negotiator with Heinz and to deal with the IP pricing. Otherwise, he would have to directly talk and negotiate with them.

² These figures were disguised.

³ This figure was disguised.

On the other hand, he wanted to achieve another goal - to save many people from injury caused by faulty can top edges. He was afraid that Heinz might dispose of Tanikei's technology once they change their business strategy. He wondered whether Heinz would promise to use safe can top in the future. If not, he wanted to take back his technology and IPs and allow Tanikei or other can manufacturers to use the technology. However, this requirement might not be acceptable to Heinz and they might abandon negotiations for this IP transaction altogether.

Mr Taniuchi knew that he had only three days before he met with the Heinz representatives to give them his final price offer. He had to decide soon not only for the company but more so for himself that he might achieve his goal to make the use of can tops safer for customers all over the world.

