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MODERN STRATEGY AND CONTRACT ISSUES BETWEEN FIRMS IN LICENSING OF TECHNOLOGY

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ABSTRACT

Licensing of technology is commonly seen as a method of generating revenue for the licensor (source) company's assets in intellectual property and reciprocally a method of going to market faster by the licensee (target) company using proven technology. Although technology licensing has been studied in the past as simply a business activity between two firms involving negotiations based on market opportunity and transactional costs, several modern factors have emerged recently that would influence both the tone and nature of negotiations in the future. Among these factors are the shortened lifespan of licensable technology, the internet as both an information source and a sales distribution channel, the enormous growth of technology markets in Asia and finally, the low level, if not the total absence, of protection for intellectual property in significant global markets. This paper examines the effect of these factors on a firm's technology management strategies and the terms of licensing contracts between firms. It is proposed that it is the long term strategy of technology management for both source and target firms that will dictate the nature of future technology licensing contracts.

Keywords: Technology Licensing, Technology Contracts, Technology Management, Technology Transfer.

1. MODERN FACTORS IN THE LICENSING OF TECHNOLOGY

This paper confines itself to reviewing *modern* issues in technology licensing faced by US companies for three reasons: (a) US companies remain in aggregate a prodigious generator of technological innovations; (b) the US also houses the largest market for technology based products; and (c) the US has a generally consistent regional and national legal infrastructure relative to intellectual property. The need to focus on modern licensing issues among US companies, especially from a long term strategic point of view, is driven by several factors: namely, the growth of the internet, the shortened lifespan of many technologies in both consumer and industrial global markets and the economic pressure to diffuse this country's massive investment in research and development by the private and public sectors. After a review of the impact that each of these factors has had on recent licensing activities it is concluded that the future of technology licensing will be driven largely by a firm's long term strategy for technology management and not by any short term solution for filling a technology need. It is anticipated that future research will validate the view that a strategic factor rather than an operational factor such as revenue generation will form the basis for technology licensing by US firms.

2. LICENSING OF TECHNOLOGY – A MEANS FOR RECIPROCAL BENEFIT

In the licensing of technology a firm grants to another the right to use proprietary knowledge developed by the first firm. This knowledge may take the form of an intangible asset such as a process in manufacturing or a tangible asset such as material or a device. The knowledge may or may not be patented or even documented. The first firm views the license as a means for generating revenue from an asset and its value is dictated by three major factors – level of uniqueness, ease of incorporation into products or commercializability, and time. It is then the task of the source company to negotiate the best price for the technology assuming it has developed a strategy for how transferring it will not hurt its own business. Of course, some companies actually incorporate licensing technology as part of their corporate strategies and rely on licensing as an important means of generating revenue. Excellent examples of such companies are *Qualcom* and *InterDigital Communications* with licensing revenue of wireless patents constituting a significant portion of their revenue and profits.

The licensee firm, on the other hand, sees the license as a means of acquiring knowledge which allows it to exploit a market opportunity. Hence, the act of licensing is documented in a binding agreement or contract between the firms and as such frames the reciprocal benefit of the act to both parties and protection each party desires from the relationship. Many authors have described typical negotiation items in the technology licensing process, (Byrnes, 1994) (Contractor, 1981, 1984), (McCaffrey & Meyer, 1989), (White, 1990). (Business International Corp, 1988 and 1990)

3. LICENSING OF TECHNOLOGY ON A GLOBAL SCALE

Although licensing of technology has diminished in intensity recently (Vonotras, 2003) it remains an important business development activity from the perspective of the acquiring firm (target) or the licensing firm (source). In fact, authors have attributed the emergence of Japan as a global economic power to the ability of that country's enterprises to successfully license technology globally but primarily from US firms through the process called "technology scanning.". (Herbig, 1995) (Odagiri, 2003) Additionally, the recent economic growth in China and India has been linked to the investment made by those countries in attracting Foreign Direct Investment (FDI), at times manifested by licensing agreements, and supporting technology education for its youth. (Story, 2003) (Zongshun, 1987) Although technology licensing agreements between firms have been studied in the international sector (Telesio, 1979)(Contractor, 1984 among many others) a typology of such international agreements is difficult to formulate since each country involved is different in business culture, intellectual property (IP) legal protection and level of technological development. The problem of unreliable trademark and copyright protection, prevalent in China and India, (Hood, 2005), has probably reached critical proportions today in light of significant market growth in those countries for advanced technology-based products. Additionally, China and India as well as other developing Asian economies have designated technology acquisition as a means for economic development. This national strategy of several Asian economies entails governmental support for (a) financing the construction of modern factories; (b) FDI by multi-national companies for entering the Asian markets; (c) science, math and engineering education for youth.(Yoshida, 2004).

4. CORPORATE STRATEGY AND MOTIVATION FOR TECHNOLOGY LICENSING

The company interested in licensing or purchasing certain rights to the technology or "target" company is faced with the task of determining the value of desired technology to its corporate strategy. Some authors (Gallini & Wright, 1990) have attributed asymmetric levels of knowledge about the technology between the firms. While this may be true in some cases, the driving force behind the potential licensee's interest in the technology stems from the strategic value that the target firm places on the technology. This value need not be limited by potential profits as suggested (Contractor, 1981) (White, 1998) but can be a necessary expense to maintain a strategic market for other products. This paper examines the factors that contribute to that strategic value and essentially form the important structural components of a technology licensing agreement. Most importantly, a factor that is often neglected in prior studies of inter-firm licensing of technology is the *long term plan* for assimilating or accessing the specific technology of interest by the licensee. Clearly this factor is crucial to a firm's long term strategic plan of revenue growth and profitability. Notably this factor can play a pivotal role in contract negotiations and overshadow other motivations for entering into a licensing agreement. Although the target firm can attempt to protect itself from sudden inaccessibility to the licensed technology by an escrow account, the only controllable alternative to such a serious event is to have a plan for autonomy or self-reliance. Contractual issues such as compensation, exclusivity or conditions of usage in the licensing of technology have been the study, both theoretical and empirical, of several authors (Bessy, Brousseau and Saussier, 2000), (Cho, 1988), (Aulakh, Cavusgil and Sarkar, 1998), (Sattin) and (Anand & Khanna, 2000). Attempts to classify these issues or rank order their importance can be misplaced easily if the licensing firm is driven by a strategic set of issues rather than a set of "operational" issues such as compensation and licensor support. Other operational issues affecting the desire to license include unavailable engineering resources to

develop the technology, desired speed to market, protection of market share or retention of certain customers, patent protection of the technology by the source company and market pressures by global competitors.

5. MODERN PERILS TO LICENSING TECHNOLOGY AND COUNTERMEASURES

Licensing of trade secrets and processes have always had the difficulty of proof of infringement since, in the first case, patents are not involved. Trade secrets are becoming almost impossible to secure despite employment agreements and since US based employees are now more mobile and less loyal to the employer than in the past. Processes, whether patented or not, have a problem of detection and verification in the offending firm. Another modern peril to trade secrets and processes is that they can now be posted on the web and disseminated widely by disgruntled employees or other firm detractors.

The music and video industries in the US have reacted to the threat the internet poses by litigating against file sharing facilitators such as Napster and subsequent imitators. Despite court actions favorable to copyright owners, consumer music and video sales continue to suffer due to widespread IP theft.

Firms have become wary of modern methods for stealing intellectual property and as countermeasures have embedded trade secrets, designs or software into devices that are “hard-coded” in chips through semiconductor masks, binary coded processors or software code with “keys” that can turn device features on or off. In this form of technology licensing, the target firm simply purchases the tangible unit from the source company along the lines of a “purchase and sale” device contract with terms outlining anticipated device purchases over time and availability. This form of technology licensing still suffers from the same single-sourced “cutoff” danger for the licensee firm that would affect its product supply and subsequent customer dissatisfaction. Again, the licensee firm has the incentive to develop a plan to remove itself from this danger. For the source company this form of licensing technology, although simple in nature, is not necessarily theft-proof since there are powerful modern tools for developing equivalent semi-conductor designs and dis-assembling binary code.

Another modern peril facing both source and target licensing firms is the shortened life of technology in general. The licensor firm must decide whether the investment necessary to protect the current version of the licensable technology will pay off during the marketable period. The firm must add the protection costs to the other overhead costs that include service support, documentation and inventory. For a short lifetime of the technology, the business case for licensing out may not be convincing to execute. Similarly, the target firm may find that the license may not lead to quick revenue generation given there may be start-up costs and lost market opportunity due to commercialization delays.

There is a duality of risk between the source and target companies with respect to both theft of intellectual property and a shortened technology lifespan. Both parties are subject to unfulfilled expectations of revenue generation and market opportunity.

The growth of technology markets in China and India and other Asian countries at a time when IP protection is difficult to enforce in those markets penalizes the technology providers in the US whether their products are being intentionally marketed in those countries or not. Hence, licensing of technology to either a domestic firm or an international firm carries the same risk of theft. The threat of IP theft forces the source company to adopt the attitude that IP will be stolen sooner or later and so it must continue to invest in IP protected product designs. The source company must then make theft difficult and expensive for the would-be thief. This is the basis for a long term strategy of technology management for the source company – intrinsic IP protection in its products.

Similarly, the motivation for the target company in a licensing deal includes not only protection for continued access to the technology but protection from theft by a competitor who has not bothered to license the technology – a free rider. The only recourse that allows control of its destiny for the target company is to plan a long term strategy to free itself from any dependency of the source company's technology. This may involve seeking an in-house solution or outright purchase of the technology and the addition of its own IP protection. In either case, this long term strategy for technology management of the target firm would dominate any set of contractual terms reached with a source company.

6. CONCLUSIONS

From the perspective described in the last section, the contractual terms of a licensing agreement between source and target firms as outlined in Table 1 of the Appendix do not necessarily change in structure but they must now be viewed with a long term technology management strategy in mind for either firm. Sections 2, 4 and 5 do become increasingly important for the target firm for protection as it finds a way to obviate the need for the technology. Sections 1, 3, 6, 8 are perhaps of more importance to the source firm that focuses on realizing revenue from its asset while Sections 7, 9 and 10 have points of interest to both source and target firms.

Appendix A: Contract Structure & Terms

In the end the negotiations between the two entities, if successful, result in a document – for simplicity hereinafter referred to as a licensing contract. Although Table 1 lists 10 major sections of such a contract, it is by no means an exhaustive list, since the objective here is to discuss the motivating factors of each party in reaching an accord for transferring the technology in light of the target company's strategic interest in the technology. A discussion of each factor follows the table.

No.	Section	Source Company	Target Company
1	Description of technology	Commits to only certain aspects of technology	Wants to assure that "complete" technology is to be transferred
2	Escrow Arrangement	Resists escrow, realizing it is the "crown jewels"	Strongly desires protection of technology not under its control, despite license
3	Usage of technology in Place and Time	Limits usage to assure itself of protecting its own markets and customers. Discusses conditions for transferability, assignability	Wishes to define usage to maximize potential profitability or strategic usage
4	Liability & Epidemic	Minimizes liability to itself	Desires protection from infringement lawsuits and assurance that technology "works"
5	Support Issues	Minimizes support expenses but realizes it is necessary	Realizes that technology cannot be fully documented and some still resides in someone's head at source company
6	Marketing, Trademarks and Disclosures	Limits usage of names and trademarks normally; disallows disclosure of terms of agreement.	Unless there is great value in brand equity, target company will opt for its own trademarks and names.

7	Ownership & Rights to Enhancement	Sometimes prohibits enhancements but normally permits them but desires rights to "back" license enhancements	Typically, target company formulates enhancements for its own markets and applications and desires to "own" outright such enhancements
8	Payment terms	Source company wants to make money on transaction after covering anticipated expenses and warranty costs	Target company does not want to buy a "pig in a poke" so is cautious about payments, especially if cash up front is required
9	Contract Renewal	Source company wants to assure itself of maximizing revenue potential	Target company wants to continue relationship if satisfactory
10	Non-Performance & Termination	Source company wants to terminate if potential not realized	Target company wants to terminate if technology or support is unsatisfactory

Table 1
Factors in Negotiating a Technology Transfer Contract

LEGEND TO TABLE 1

1. Description of Technology

In this section of the contract, a full description of the technology is given, citing user manuals, product specifications, user or operator manuals, design documents, drawings, schematics, formulae, component and module specifications, sources for such components and modules, sublicenses for use of custom components or modules production processes, prototypes or demo, module test and system test processes, equipment for test, software source code, compilers, assemblers, loaders, debuggers or other software tools, sublicenses for usage of software modules from other suppliers, and software documentation. All documentation will need to have version numbers so that updates, or upgrades, or software bug fixes can be incorporated into newer version numbers. The objective of this contract section is to have the most up-to-date versions of all documentation. This will eliminate errors in manufacturing or in being able to recreate the technology in as bug-free a version as possible.

2. Escrow Arrangement

This section specifies what happens when the source company goes out of business, is purchased by another entity or is merged with another entity. The protection sought here is that all unreleased or unlicensed technology documentation is put into an "escrow account" held by a third party (like a bank) and is released to the target company under certain conditions (like bankruptcy of source company) so that the target company's usage of the technology is not disrupted by an event not under its control. The idea here is that a revenue stream, customers of the target company will come to depend on some aspect of the technology that is still held by the source company and not released to the target company. An example of this dependency is a custom chip that is sold to the target company by the source company to be incorporated in the product manufacture. The design (mask and other specifications) of the custom chip is retained by the source company and not revealed to the target company except through this escrow arrangement.

3. Usage of Technology

Technology transfer contracts typically state the conditions under which the technology can be used by the target company. For example, the technology can only be incorporated into products sold in a country, a territory or region (spatial condition). Similarly, the source company can prohibit the target company from selling to a certain

set of customers with a list specified or from selling to a certain profile of customers (customer prohibition). Another condition may be application specific, such as incorporating the technology into medical devices but not products used in leisure and entertainment.(application condition). Yet another condition may be time dependent. The target company can use the technology for one or more years and then the contract has to be renegotiated (temporal condition, sometimes called a “sunset” clause). A common restriction in tech transfer contracts is that the technology cannot be sublicensed (or assigned) by the target company except to a wholly owned subsidiary. This sublicensing restriction can only be lifted by the source company and re-negotiations are usually implied to do so.

4. Liability & Epidemic Scenario

An important clause in a tech transfer agreement is that dealing with liability. The target company usually wants assurance that the source company “owns” the technology and is willing to assume liability for any infringement legal action brought against the target company by a third party. Such protection by the source company exempts it from legal action brought against the target company for misrepresentation of product or other misuse, abuse or business actions not directly tied to the integrity of the technology being licensed or transferred. Should a problem occur with products manufactured utilizing the technology and if the source of the problem is linked directly to the technology under license, then the source company is liable for expenses incurred by the target company if the problem becomes one of “epidemic” proportions – usually 10% or more of all products shipped having the “problem.”

5. Support Issues

Rarely can a technology be transferred or licensed without substantial support from the source company. This support can take many forms. First, the form of documentation turned over by the source company may be seen as “non-standard” by the target company so its designers or manufacturing engineers may be helped in interpreting the documentation. This can be accomplished through “training” or consultation visits or conversations. A typical contract acknowledges the possible need for such support and limits the time allocated by the source company for such support in order to prevent abuse by the target company of valuable engineering or production time. Further, if problems occur in incorporating the technology, especially in the case that a “bug” or defect is discovered by the target company, the source company usually specifies a “response” time to fix the bug or at least assign an engineer to work on it with the target company.

6. Marketing, Trademarks and Disclosures

Restrictions from the source company may prevent the target company from even disclosing that it has entered into a licensing agreement or that it is using IP from the source company. The source company may see such protection as necessary to prevent dilution of a trademark value or prevention of undesirable usage of it by the target company. In some cases, the source company may find it advantageous to encourage the target company to advertise this fact. For example, the “Intel Inside” trademark campaign is seen as an advantage to both source and target firms.

7. Ownership and Rights of Enhancements

Typically the source company retains all ownership rights of the technology with the target company receiving unlimited rights (except for conditions cited above) to use the technology. However, it is common for the target company to examine and understand the technology and then make “enhancements” in hardware, software or system design. This section of the contract specifies the ownership of such enhancements (usually the target company if developed unilaterally) but allows the source company to cross-license the usage of such enhancements under certain conditions. An example of such condition is forgiveness of licensing fees due to the source company if the source company decides to use the enhancements in its products or associated manufacturing processes.

8. Payment Terms & Valuation

The target company usually has a dollar figure in mind of what its usage of the technology is worth. Normally, the value is determined by what it would cost to develop the technology itself in direct expenses but also working in the market lost during the time it would take to develop it. The latter can also be important strategically to the target company, more so perhaps than any revenue or profit component lost in time. The source company, of course, is in a strong negotiating position if it is the only one or one of very few sources of the technology. The position is made stronger if its technology has become a “standard” in the industry. An example of this is the use of Rockwell International modem chip sets or modules for the fax machine boom of the 1980’s and 1990’s. Many fax machine makers licensed or simply bought the chips from Rockwell because its chips were standards compliant, small in size and readily available in volume. Licensing fees for the technology were incorporated into the price per chip set. Payment terms can take the form determined by three major factors. First, if any modification needs to be made to the technology by the source company, then a “non-recurring” engineering charge applies. This charge can be expensive since it necessitates valuable engineering design and test time at the source company. Thus, the source company will not charge time and materials expense but also “opportunity lost” value of the engineering team, reflecting the potential value of other product design that the engineering team could have otherwise been assigned to do. A second factor for payment is exclusivity. Should the target company wants to exclude any other company, besides the source company, from using the technology, the price of licensing the technology goes up substantially. The source company is essentially giving up its right to license the technology to the rest of the world for the “lifetime” of the technology. Hence, it is forced to estimate what the potential or future licensing fees may be for the technology from everyone else. Normally, the source company comes up with an estimate that is exorbitantly high, thus challenging the target company to validate that such a high price is warranted. The third factor influencing payment terms is that of deciding whether a “pay as you go” scheme is better than a one-time payment. Should the volume of usage is projected to be high, then a one-time payment is preferable to the target company. However, if there is uncertainty to the volume or to the usability or integrity of the technology, then a pay as you go scenario is preferable. An example of a pay as you go set of terms is simply buying individual chips or modules (either software or hardware) from the source company, with specified delivery dates and volumes. The source company may see a pay as you go scheme as not worth its time, especially with the support it is committed to perform. Hence, a common element demanded by the source company in a pay as you scheme is a “down payment” to cover its one time expenses and minimal profit in actually performing the transfer. Such a payment may also cover the first N months of usage or the first N modules used by the target company.

9. Contract Renewal

It is rarely the case that the licensing agreement is made “evergreen” or without a specific termination or renewal date. Such a date forces both parties to review the merits of the original agreement and revise the terms to reflect current requirements from both sides.

10. Non-Performance & Termination

This section protects both parties in cases of breach, bankruptcy, sale of company or change of control especially if such change involves a known competitor to either party.

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